

RG 104, Sequence 171

8NS-104-95-171, Miscellaneous
Correspondence, working papers,
reports, studies & photographs of the
“U.S. Mint Site Selection,” 1970 - 1979.

RG 104

FY 09

UNITED STATES MINT
Denver Colorado

Architectural site plans for "New Denver Mint"
Misc. Correspondence, Working Papers, Reports,
Studies and Photographs for "US Mint Site Selection"
1970-1979

OLD FRC 104-89-0005

8NS 104-95-171

Box 3

Emersonian & Historical Presentation

ENVIRONMENTAL
AND
HISTORIC PRESERVATION
ASSESSMENT

FRANKFORD ARSENAL

OFF SITE PRODUCTION SUPPORT

FOR 5TH STREET PHILADELPHIA MINT

Prepared by

UNITED STATES MINT

PHILADELPHIA, PA

JANUARY 5, 1979

TABLE OF CONTENTS

	PAGE
I. Description of Proposed Action	1
A. Introduction	
B. Activities	
II. Relationship to Land Use Plans, Policies & Controls for the Affected Area	2
A. Compatibility with Existing Zonings & with Previous Activities	
B. Compatibility with Proposed Land Use within Arsenal Boundaries	
III. The Probable Impact of the Proposed Action on the Environment	
A. Air Pollution	3
B. Water Pollution	6
C. Solid Waste Disposal	7
D. Noise	8
E. Chemical & Hazardous Substances	8
F. Health & Safety	9
G. Energy & Utilities	9
H. Socio-Economic Effects	10
I. Traffic	11
J. Historic Preservation	12
IV. Alternatives to the Proposed Action	14
V. Measures to Mitigate Potential Environ- mental Impacts	14
VI. Adverse Impacts which Cannot be Avoided	15
VII. Decontamination	15
VIII. Summary	16
IX. Calculations	17

Enclosures

Map	Y-331	Vicinity Map
Map	Y-332	Frankford Arsenal

Material Safety Data Sheet - Oakite #88

Material Safety Data Sheet - Oakite #12

Material Safety Data Sheet - Valley AC-67

I. DESCRIPTION OF PROPOSED ACTION

A. Introduction and Reason for Proposed Relocation

The Bureau of the Mint has been confronted with the need to expand coin production in the next 7 years as well as to resolve the OSHA/EPA health problems present in the various Mint facilities.

Increased production at 5th Street will compound the existing noise, and congestion problems. An off-site facility would provide the production and relieve the noise and congestion. When the Frankford Arsenal buildings became surplus, the Bureau assigned study tasks to the Philadelphia Mint to determine feasibility and costs.

A final report issued December 1978 on this study recommended the use of a number of these buildings, which were selected after structural tests determined allowable floor loads.

B. Activities which will take place

The off-site facility will provide the following functions:

- 1 - Storage of purchased strip material for all denominations.
- 2 - Shipment of purchased strip for 5¢ and Clad coins to 5th Street
- 3 - Storage of purchased Copper Cathode and Nickel chips
- 4 - Processing of Copper Cathodes, and shipment of cut Cathodes to 5th Street, and cut Copper Loops to vendors
- 5 - Shipment of Nickel chips to 5th Street

- 6 - Processing of all purchased Penny strip into blanks. Shipment of cut blanks to 5th Street. Shipment of cut & annealed blanks to West Point.
- 7 - Conversion of Penny blanks into coins; bagging and storage.
- 8 - Shipment of Penny coins to Federal Reserve Banks.

II. RELATIONSHIP TO LAND USE PLANS, POLICIES & CONTROLS FOR THE AFFECTED AREA

A. Compatibility with Existing Zoning and with Previous Activities

The existing zoning is industrial which is compatible with the planned use of the buildings.

Previous activities of the arsenal were heavy industrial similar to its new intended uses.

B. Compatibility with Proposed Land use within Arsenal Boundaries

The Philadelphia Industrial Development Corporation (PIDC) has been assigned, by the Mayor's office, the task of converting the Arsenal site to an industrial park to improve the economic and job outlook in the city. Installing the Mint's off-site facility here is in line with the objectives of PIDC and they are anxious to have the Mint act as a nucleus in this development.

III. THE PROBABLE IMPACTS OF THE PROPOSED ACTION ON THE ENVIRONMENT

A. Air Pollution

1. Truck Traffic

A truck traffic of 33 trucks per day is estimated for 1985. This quantity will have a negligible effect on the air quality.

2. Furnace Effluents

The discharge from two annealing furnaces will be well within the city and state standards for particulates and toxic fumes. The data is as follows:

I. Exhaust Gases from Furnace

(a) Products of combustion generated by burning natural gas with 20% excess air

(1) Heat Generated - 2,520,000 $\frac{\text{BTU}}{\text{HR}}$

(2) Volume - 33,666 CFH

(3) Temperature - 1350°F

(4) Composition: 9% - 10% CO₂

22% H₂O

0% CO

3.6% O₂

Remainder N₂

Trace SO₂

Trace NO_x

II. Gas Cover

An Exothermic Gas Generator is used to produce a gas rich in Hydrogen for preventing oxidation of the copper blanks. The characteristics of this gas are:

(1) Volume = 1400 CFH

(2) Temperature = 1350°F

(3) Composition: 10% CO₂

4% CO

4% H₂

Remainder Nitrogen

Trace SO₂

Trace NO_x

Contamination levels from items I & II above and maximum allowable levels are listed in Table 1.

3. Boiler Effluents

a. General

The boiler capacity is 350 HP or 14,100,000 BTU per hour heat input.

b. Sulfur Dioxides

This unit can burn either #6 fuel oil or natural gas. When burning natural gas, the effluents will be similar to those discussed in Section 2-I. When burning fuel oil, the requirement to supply oil with a sulfur content less than 0.3% by weight is the responsibility of the oil suppliers. If this is met, then the effluents discharged are acceptable as described in "Air Management Code, Title 3, paragraph 3-207, page 10. The oil supplied will be purchased under a specification which will limit the sulfur content to .3%.

c. Nitrous Oxides

The nitrous oxides generated when burning #6 oil is 60 pounds per 1,000 gallons of oil. The oil generates 135,000 BTU per gallon when burned. Therefore 60 pounds of NO_x are produced when generating 135 million BTU or .444 pounds per million BTU. The city standard does not cover fuel burning equipment with a rating less than 250 million BTU per hour.

d. Particulates

Particulate emissions of boilers firing grade 6 are a function of the sulfur content of the oil. Boiler load also effects emission. At low load particulate emissions may be lowered as much as 60% from small industrial units. No reductions have been assumed in the calculations.

For the 350 HP unit, the emissions are .044 pounds per million BTU input or .058 pounds per 1,000 pounds of stack gas.

e. Applicable Regulations

The City of Philadelphia air pollution standards apply. These are equivalent or more stringent than Federal or State standards.

~	Air Management Regulations I, II, III	-	December 26, 1974
"	"	"	IV - August 20, 1972
"	"	"	V - December, 1977

Air Management Regulations	VII	- July, 1972
" " "	VIII	- August, 1972
" " "	IX	- August, 1972
" " "	X	- May 4, 1974
" " "	XI	- May 4, 1974
" " "	XII	- August, 1978

B. Water Pollution

I. Water & Sewage

Water & sewer services will be provided by the City of Philadelphia as was done previously when the Arsenal was operational. Water & sewage requirements will be 130,000 gallons per day, well below the capacity of the present system.

II. Discharge Water from Annealers

The discharge water from the machines which wash and rinse one cent blanks will be treated before discharged into the city sewers. This process is described in Section V. The net effects is that the treated water will be within the pollution levels acceptable to the city.

III. Boiler Discharge

All condensate, steam exhaust, and boiler blow-off will be cooled to below 140°F before discharge. This is accomplished by use of a receiving tank with over flow dam.

IV. Lunch Room Discharge

Grease traps will be installed where necessary.

V. Applicable Regulations

The Water Quality Standards set by the Federal (EPA) and State Agencies are requirements that must be met by the municipalities which discharge water into streams, rivers and oceans. The local municipalities, such as the City of Philadelphia set minimum waste water standards that must be met by the users, such as the United States Mint at the Frankford Arsenal. These regulations will be followed and complied with.

C. Solid Waste Disposal

Solid Waste will consist of the following:

Paper products

Trash

Scrap lumber

Scrap metal

These will be collected in a dumpster and removed by a private contractor on a semi-weekly basis.

D. Noise

The noise generated by the Blanking Presses exceed the OSHA Standards without accoustical enclosures. Section V describes the enclosures to be installed and other sound reducing measures so that the internal area of the buildings will comply with the latest OSHA noise standards.

E. Chemical & Hazardous Substances

Cleaning solutions used in the wash and rinse machines are hazardous if not used properly. Safety precautions such as gloves, eye glasses, eye wash and showers will be provided.

The Appendices contain the Material Safety Data Sheets on the cleaning materials used, consisting of Oakite #12, Oakite #88, Valley AC-67.

Lubricating oils, solvents, and charcoal will be stored in one of the bunker buildings previously used for ammunition. These buildings will be protected by CO₂ Cardox System.

F. Health & Safety

Standard Operating Procedures which have been in effect at the Philadelphia Mint and which have been reviewed by the Safety Department will be initiated in the Arsenal and enforced by supervision. Safety equipment such as glasses, and safety shoes will be obligatory. All possible causes of accidents are required to be reported, and all accidents are investigated to determine cause and future prevention. A dispensary with a nurse will be available.

Fire prevention systems have been analyzed and will be installed.

G. Energy and Utilities

Energy requirements are minimal.

Energy Requirements

Bldg.	Gas (CFH)	Elec. (KW)	Oil (GPH)	Notes
47/48	0	252	0	3 shifts, 5 day/wk.
55	2687	688	0	3 shifts, 5 day/wk.
58	0	292	0	1 shift, 5 days
141 thru 143 (2 KW. each)	0	10	0	1 shift, 5 days
Power Plant:				
Lighting	0	60	0	3 shifts, 5 days
Air Comp.	0	194	0	3 shifts, 5 days
* Boiler	14,250	60	105	3 shifts, 5 days
TOTAL	16,937	1,556	105	

*Boiler uses either gas or oil, not both. It will normally use oil.

Water is supplied to the Base by the Philadelphia Water Works, a city operated system. The quantity supplied the arsenal when it was in operation is far beyond the quantity now required.

The Base sewerage system was operated by the city and its capacity is far beyond what is its presently planned useage. No additional sewerage capacity is needed.

The existing electrical feeds, gas and water supplies are more than adequate to support this new facility.

The road networks are satisfactory. Map #Y-331 shows the Key traffic arteries near the arsenal.

Rail service (freight only) is provided by the Pennsylvania Railroad. Spur tracks in fair condition, connect the railroad to Buildings 55 & 58. It is anticipated that these spurs will be used to transport coils and cathodes from vendors.

H. Socio - Economic Effects

The economic impact of locating the facility in the Frankford Arsenal is considered to be favorable to the local economy. These new jobs will serve to replace some of the jobs lost when the arsenal began to be phased out.

The facility is planned for an initial staffing of 135 people in 1980 with a growth to 213 people in 1985 (3 shift operation). It is expected that these people will be hired from the local labor supply in Philadelphia.

The bulk of the employees will be mechanics, machine operators, and material handlers averaging \$16,000 per annum.

The base had been used for manufacturing, and this proposal will continue its use for this purpose. This proposal constitutes a proper and beneficial land use consistent with the existing land use. It is probably its best land use.

There is no need to change the zoning classification. The present outside walls isolating the arsenal from the surrounding community will be maintained.

There will be no change in the aesthetics, landscaping, and open space on the site as there will be no additional new construction or demolition of buildings.

Ground traffic access to the site is excellent; most traffic will come by Interstate Highway I-95 which is located adjacent to the arsenal.

The effects of the construction costs to be expended will be minor because the facility exists and requires minor modifications and repairs. Construction noise will be negligible and control of pollution during construction can be accomplished by requiring the contractor to comply with local regulations regarding disposal of solid waste and dust control.

I. Traffic

Access to the Arsenal would probably be from Interstate I-95 which has an on-off ramp access adjacent to the

arsenal. There will be a very small amount of traffic going through the adjacent communities to reach the arsenal.

Work hours are planned for three shifts; i.e. 7:15 am to 3:15 pm, 3:15 pm to 11:15 pm, and 11:15 pm to 7:15 am.

The site has internal road systems more than adequate to accommodate all on-site traffic. Adequate parking is available in appropriate locations.

There is public transportation available by means of bus and railroad.

This arsenal at one time had 21,000 employees on a three shift basis. This proposal of 215 employees represents a very drastic reduction in the amount of traffic that used to be handled at this base.

J. Historic Preservation

A survey conducted by John Milner Associates, 309 North Matlock Street, West Chester, Pennsylvania, under Control Number DACA-31-78-C-0058, shows that there is one building of Historical importance in the area under consideration. The buildings are listed below with their category designations. The definitions of these categories are as follows:

Category 1 - Buildings of great importance which contribute significantly to the Historic District.

Category 3 - Same as 1, however if demolished, they should be documented in accordance with

the standards of Historic Engineering Record by means of a written report and large format perspective control photography.

Category 4 - No importance.

<u>Buildings</u>	<u>Category Number</u>
47	3
48	3
49	1
55	3
58	3
59	4
60	4
61	4
63	4
137	4
138	4
140	4
141	4
141A	4
142	4
142A	4
143	4
147A	4
148A	4

The only building of historic importance is #49 which is a sentry tower built into the periphery wall. It is approximately 65 feet from the nearest building (#48) which will be used principally as a warehouse. There will be no

trafficking within 35 feet of the tower. It is proposed that a protective guard rail, 10 feet from the tower, be installed.

IV. ALTERNATIVES TO THE PROPOSED ACTION

A. Other Locations

There are no other government owned buildings in the Philadelphia area which provide the same size and type of heavy industrial buildings.

V. MEASURES TO MITIGATE POTENTIAL ENVIRONMENTAL IMPACTS

A. Water Pollution

1 - All discharged process water shall pass through neutralizing tanks and clarifier to reduce the contaminant level below the values listed below:

(a) PH shall be less than 10 or more than 5.0

(b) Metallic Concentrations

(1) Copper less than 3 mg/l

(2) Zinc less than 5 mg/l

2 - Grease traps will be used in machine shop and lunch room.

B. Air Pollution

No air pollution equipment will be required.

C. Noise Abatement

Equipment generating noises over 90 DB such as the blanking presses, coining presses, and riddles will be installed in sound enclosures such that the working environment around the machinery shall be within the OSHA sound level requirements.

VI. ADVERSE IMPACTS WHICH CANNOT BE AVOIDED

This proposed action will not have any adverse environmental effects, but rather a beneficial economic effect to the community.

VII. DECONTAMINATION

A survey of contaminations in all buildings has been made by Battelle, Columbus, Ohio under Contract No. DAAK-11-78-C-0047. The Army will decontaminate the buildings before occupancy. The types of contaminants that exist are of the following types:

- (a) Noxious - Explosive Gases
- (b) Radiation
- (c) Explosive Compounds
- (d) Heavy Metal Concentrations
- (e) Metals in Vents and Ducts
- (f) Radiation in Vents and Ducts
- (g) Heavy metals in sumps
- (h) Radiation in Sumps
- (i) Explosives in Sumps

The desired order of building decontamination is as follows:

- (a) 58
- (b) 47/48

(c) 55

(d) all other buildings

VIII. SUMMARY

The proposed use of buildings at the Frankford Arsenal would not have any adverse environmental effects, rather it is an efficient use of existing Department of Defense surplus buildings. The development of this facility may encourage other industrial interests to use the remaining Frankford Arsenal buildings which the Philadelphia Industrial Development Corporation plans to convert to an industrial park.

IX. CALCULATIONS OF CONTAMINANT CONCENTRATIONS

A. Annealer Furnaces

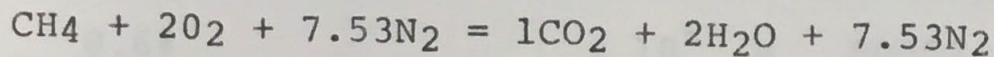
(1) SO₂ Generated

This furnace burns Natural Gas. The SO₂ generated is:

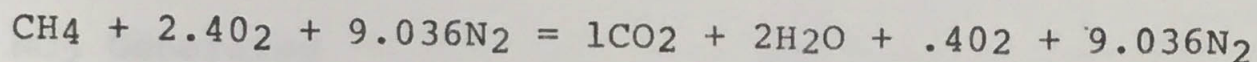
0.6 pounds per 1,000,000 CuFt of Gas burned.

Calculation of the PPM of SO₂ in the Exhaust Gas

Combustion Equation:



Using 20% excess air:



1,000,000 Cubic Feet of Gas weighs 45,000#

This is equal to $\frac{45,000\#}{16,771 \text{ (Mol. wt. of gas)}} = 2683 \text{ Moles}$

1 Mole of gas produces 12.436 Moles of exhaust

2683 Moles of gas produce $2683 \times 12.436 = 33,365$

Moles of exhaust gas.

$0.6\# \text{ of SO}_2 = \frac{0.6}{64.06 \text{ (Mol. wt. of SO}_2\text{)}} = 0.00936 \text{ Moles}$

$\text{PPM by Volume of SO}_2 = \frac{.00936 \times 10^6}{33,365}$

= 0.2805

The Molecular Weight of Natural Gas was calculated using the following mixture:

<u>Element</u>	<u>%</u>	<u>Mol.Wt.</u>	<u>Mol.Wt. x %</u>
Methane	94.52	16.04	15.16
Ethane	3.29	30.07	.989

<u>Element</u>	<u>%</u>	<u>Mol.Wt.</u>	<u>Mol. Wt. x %</u>
Propane	0.73	44.09	.322
Butane	0.26	58.12	.151
Pentane	0.10	72.15	.072
Hexanes Plus	0.09	86.17	<u>.077</u>
			16.771

Calculation of Pounds Per Million BTU Input

$$\frac{0.6\#}{1,000,000 \times 1050 \frac{\text{BTU}}{\#}} \times 10^6 = .00057$$

(2) NO_2 Generated

80# of NO_2 is generated per 1,000,000 cu.ft. of gas burned.

Calculation of PPM by Volume

$$\text{Moles of } \text{NO}_2 = \frac{80}{46} = 1.739$$

$$\begin{aligned} \text{PPM} &= \frac{1.739 \times 10^6}{33,365} \\ &= 52.12 \end{aligned}$$

Calculation of Pounds Per Million BTU Input

$$\frac{80\#}{1,000,000 \text{ Cu.Ft.} \times 1050 \frac{\text{BTU}}{\text{Cu.Ft.}}} \times 10^6 = .076$$

(3) CO Generated

An exothermic generator makes H_2 and CO gas for protecting the metal from oxidizing. 1800 CFH is generated of which 4% is CO. This gas is mixed with exhaust from the furnace.

Gas exhaust = 2532 (CFH of Nat'l gas)

$$\times 12.436 \frac{(\text{Moles exhaust gas})}{(\text{Moles input gas})}$$

$$= 31,487 \text{ CFH}$$

Protective
Gas

$$= \underline{1,800}$$

Total Gas = 33,287 CFH

$$\text{CO} = 4\% \text{ of } 1800 \text{ CFH} = 72 \text{ CFH}$$

$$\text{Co in \% by Volume} = \frac{72}{33,287}$$

$$= \underline{.216\%}$$

B. Boiler

The boiler will burn #6 Grade residual fuel oil.

(1) SO_2 Generated

Sulfur in #6 oil is approximately 0.30% by weight

Weight of SO_2 after combustion:

$$157 \times \% \text{ Sulfur}$$

$$157 \times .3 = 47.1 \text{ Pounds } SO_2 \text{ per 1,000 gallons of oil.}$$

Boiler will burn 105 GPH.

Pounds per Million BTU Input:

$$\frac{47.1}{\frac{1,000 \text{ gal.} \times 135,000 \text{ BTU}}{1,000 \text{ Gal.}}} = .348$$

Calculate PPM of SO₂

Air required for Theoretical Combustion = 7.58#/10,000 BTU

$$\frac{135,000 \frac{\text{BTU}}{\text{Gal.}} \times 105 \frac{\text{Gal.}}{\text{Hr.}} \times 7.58}{10,000} = 10,744 \#/\text{HR of Air}$$

$$\text{Cu. ft. of Air/Hr.} = \frac{10,744}{.075} = 143,253 \text{ CFH of Air}$$

Add 20% Excess Air = 171,904 CFH of Air

$$\text{SO}_2 \text{ per hour} = \frac{47.1 \text{ Pounds (per 1,000 gals.)} \times 105 \frac{\text{gals}}{\text{Hr.}}}{1,000}$$

$$\text{SO}_2 = 4.945 \text{ Pounds/Hr.}$$

$$\text{SO}_2 = 4.945 \times \frac{1}{.1189 \#/\text{cu.ft.}}$$

$$\text{SO}_2 = 41.59 \text{ Cu.Ft./Hr.}$$

$$\text{SO}_2 \text{ PPM} = \frac{41.59 \times 1,000,000}{171,904}$$

$$= 241.9$$

(2) NO₂ Generated

No₂ is 60 Pounds per 1,000 gallons of #6 oil.

Pounds per Million BTU Input

$$\frac{60}{\frac{1,000 \text{ gal.} \times 135,000}{1,000,000}} = .444$$

(3) Particulate

$$\begin{aligned}\text{Particulate Emission in lbs./1,000 gals.} &= 10 (S) + 3 \\ &= 10 (.3) + 3 \quad \text{where } S = \% \text{ Sulfur} \\ &= 6 \text{ Lbs./1000 Gals.}\end{aligned}$$

$$\begin{aligned}\text{Lbs./million BTU input} &= \frac{6}{\left(\frac{1,000 \times 135,000}{1,000,000} \right)}\end{aligned}$$

$$= 0.044$$

Calculate Wt. per 1,000 pounds of stack gas :

$$\text{Stack Gas} = 143,253 \text{ CFH}$$

$$\text{Wt. Stack Gas} = .075 \times 143,253 = 10,473\#$$

$$\text{Particulate} = \frac{6\#}{1,000} \times 105 \text{ gal} = 0.63\#$$

$$\frac{\# \text{ Part.}}{1000\# \text{ Stack Gas}} = \frac{0.63}{10,473} \times 1,000 = .058$$

(4) CO Generated

5 lbs. CO per 1,000 gallons of oil.

$$\text{Stack Gas} = 143,253 \text{ CFH}$$

$$\text{CO Weight} = 5 \times \frac{105}{1,000} = 0.525\#/\text{Hr.}$$

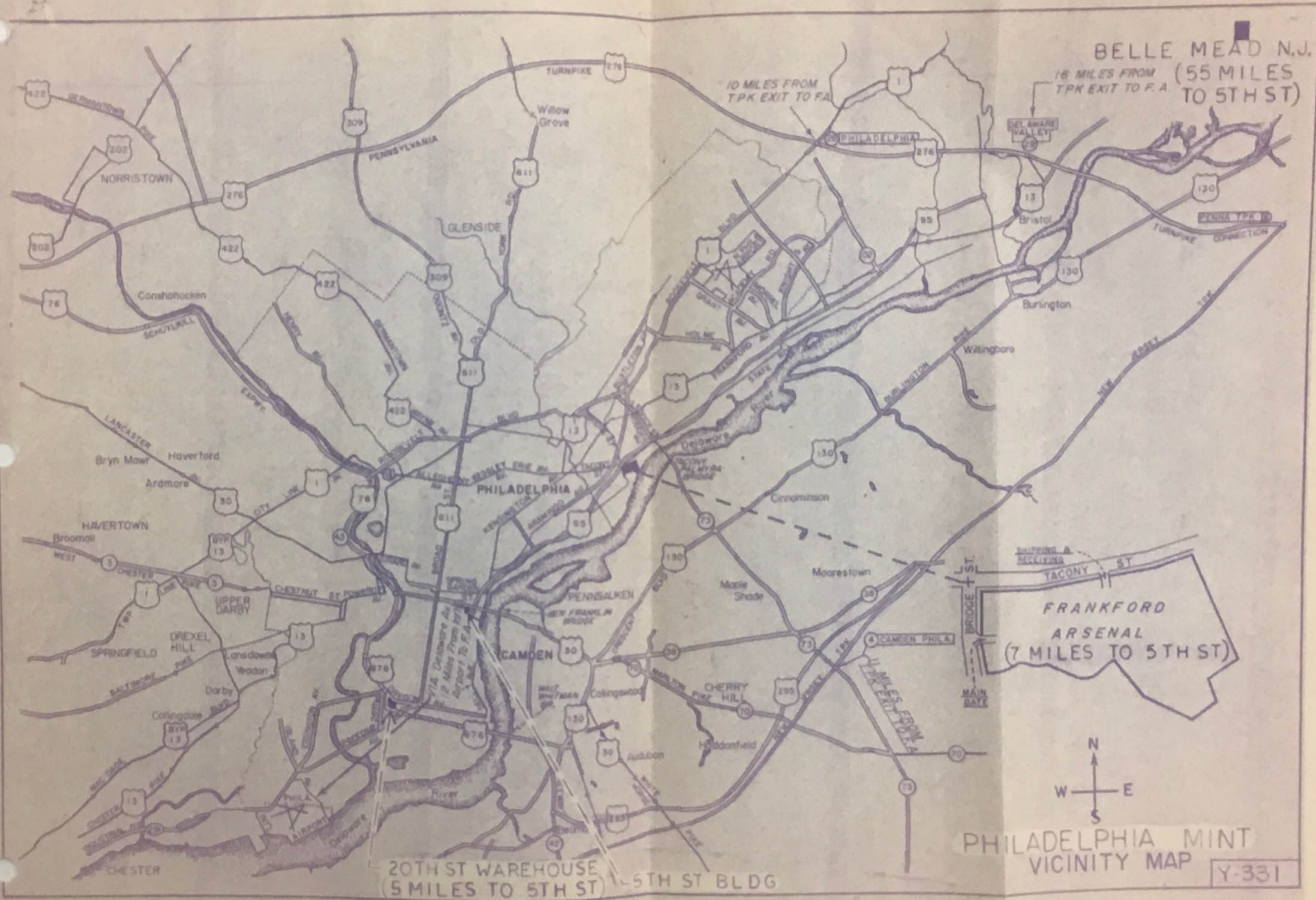
$$\text{Cu. Ft. CO} = 13.5 \frac{\text{Cu.ft.}}{\text{Lb.}} \times 0.525 \text{ Lbs/Hr.}$$

$$= 7.08 \text{ Cu. Ft./Hr.}$$

$$\% \text{ by Volume} = \frac{7.08}{143,253} = .005\%$$

Contaminant	Concentration at source, discharged into outside air		CITY OF PHILADELPHIA AIR STANDARDS		STATE OF PENNSYLVANIA STANDARDS		FEDERAL EPA STANDARDS	
	ANNEALER	BOILER	Max.allowable levels	Regulations	Max. allowable levels	Regulations	Max. allowable levels	Regulations
Particulate matter EMISSIONS 1 - from combustion units		0.04#/Million BTU input 0.058#/1000# Stack gas	0.1 pound per 1,000 pounds of stack gas adjusted to 12% CU_2 by volume	Air Management Regulation II, Sec. V, May 9, 1978	0.4#/Million BTU input	Title 25 Amended Oct.31,1973 Paragraph 123.11	0.10#/Million BTU input, max. 2 hour average	Stds. of performance for new stationary sources (40 CFR, part.60) Para. 60.42, May 3, 1974
2 - other processes					.04 Grains per Std. Cu. ft.	Paragraph 123.13		
CO	0.22 by Volume	.005% by Volume	1% by Volume	Air Management Regulation VI, June 13, 1972	No Standards	None		
SO ₂	0.28 PPM by Volume	.348#/Million BTU input 242 PPM	250 PPM by Volume	Title 3, Air Management Code including amendments thru May 9, 1978	500 PPM(by Vol.) all sources 4#/million BTU input-combustion units	Paragraph 123.21 Paragraph 123.22 (c)	0.8#/Million BTU heat input, max. 2 hr. avg. when liquid fossil fuel is burned.	40 CFR, Part 60 Para. 60.43
NO _x	0.076#/Million BTU input	.44 #/Million BTU input	0.20#/Million BTU input (Gaseous Fuel) 0.3#/Million BTU input (Liquid Fossil Fuel)	Air Management Regulation VII, April 11, 1972 Only applicable to any fuel burning equipment equal to or greater than 250 Million BTU per hr. heat input	No Standards	None	0.20#/Million BTU heat input (.36g per million cal.) Max. 2 hr. avg. expressed as NO ₂ when gaseous fossil fuel is fired. 0.30#/Million BTU heat input, max. 2 hr. avg. when liquid fossil fuel is burned.	40 CFR, Part 60 Para. 60.44 Only applicable to any fuel fired steam generating unit of more than 250 million BTU per hr. heat input

GASEOUS EFFLUENTS FROM ANNEALERS & BOILER



RESIDENTIAL

SIMONDS ABRASIVE CO

BARNETT DIV ALLED CHEMICAL CORP

LOMBARD TRUCKING CO

DIETZ & WATSON INC
HEAVY PROTECTORSROHM & HAAS CO
CHEMICALSPHILA. U. S. MINT PENNA.
INDEPENDENCE MALL

FRANKFORD ARSENAL

GRANDY	DATE
CHECKED	
APPROVED	
SCALE	

Y-332

U.S. DEPARTMENT OF LABOR
Occupational Safety and Health Administration

Form Approved
OMB No. 44-R1387

MATERIAL SAFETY DATA SHEET

Required under USDL Safety and Health Regulations for Ship Repairing,
Shipbuilding, and Shipbreaking (29 CFR 1915, 1916, 1917)

SECTION I

MANUFACTURER'S NAME OAKITE PRODUCTS, INC.		EMERGENCY TELEPHONE NO. 201-464-6900
ADDRESS (Number, Street, City, State, and ZIP Code) 50 Valley Road, Berkeley Heights, New Jersey 07922		
CHEMICAL NAME AND SYNONYMS		TRADE NAME AND SYNONYMS Oakite 88
CHEMICAL FAMILY Acid	FORMULA Proprietary	

SECTION II - HAZARDOUS INGREDIENTS

PAINTS, PRESERVATIVES, & SOLVENTS	%	TLV (Units)	ALLOYS AND METALLIC COATINGS	%	TLV (Units)
PIGMENTS			BASE METAL		
CATALYST			ALLOYS		
VEHICLE			METALLIC COATINGS		
SOLVENTS			FILLER METAL PLUS COATING OR CORE FLUX		
ADDITIVES			OTHERS		
OTHERS					
HAZARDOUS MIXTURES OF OTHER LIQUIDS, SOLIDS, OR GASES				%	TLV (Units)
Oxalic acid				10	1mg/M
Sodium bisulfate				75	Not established

SECTION III - PHYSICAL DATA

BOILING POINT (°F.)	N/A	SPECIFIC GRAVITY (H ₂ O=1) Bulk density	9.8
VAPOR PRESSURE (mm Hg.)	N/A	PERCENT VOLATILE BY VOLUME (%)	N/A
VAPOR DENSITY (AIR=1)	N/A	EVAPORATION RATE (_____=1)	N/A
SOLUBILITY IN WATER @ 70°F. * Moderate @ 180°F. * Appreciable		pH @ 2 oz/gal.	1.4
APPEARANCE AND ODOR Tan powder; mild, acid odor.			

* Contains some finely divided, easily dispersed insoluble particles at all concentrations.

SECTION IV - FIRE AND EXPLOSION HAZARD DATA

FLASH POINT (Method used)	None.	FLAMMABLE LIMITS	N/A	Lel	Uel
EXTINGUISHING MEDIA	Will not burn or support combustion.				
SPECIAL FIRE FIGHTING PROCEDURES	Standard protective clothing should be worn including adequate respiratory protection.				
UNUSUAL FIRE AND EXPLOSION HAZARDS	Concentrated solutions may react with some metals giving off hydrogen gas.				

SECTION V - HEALTH HAZARD DATA

THRESHOLD LIMIT VALUE	Mixture: unknown. See Section II.
EFFECTS OF OVEREXPOSURE	Dry powder: Direct contact may cause burns of eyes and causes irritation of skin. Solutions: Direct contact causes burns of eyes and skin. Repeated or prolonged inhalation of dust, fumes or mist may cause irritation of mucous membranes.
EMERGENCY AND FIRST AID PROCEDURES	Immediately flush eyes or skin with plenty of water for at least 15 minutes; for eyes, get medical attention. Remove contaminated clothing and shoes and wash before reuse. For inhalation, remove from exposure.

SECTION VI - REACTIVITY DATA

STABILITY	UNSTABLE		CONDITIONS TO AVOID
	STABLE	X	N/A
INCOMPATIBILITY (Materials to avoid)	Alkaline materials; materials containing chlorine.		
HAZARDOUS DECOMPOSITION PRODUCTS	When heated to decomposition, may yield fumes of oxides of sulfur.		
HAZARDOUS POLYMERIZATION	MAY OCCUR		CONDITIONS TO AVOID
	WILL NOT OCCUR	X	N/A

SECTION VII - SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED
Sweep up dry powder. In any case, flush area with plenty of water. Neutralize remaining traces with soda ash or lime and flush area again with water.

WASTE DISPOSAL METHOD
Neutralize with alkaline material, dilute and discharge according to federal, state and local regulations.

SECTION VIII - SPECIAL PROTECTION INFORMATION

RESPIRATORY PROTECTION (Specify type) Dust mask when charging.		
VENTILATION	LOCAL EXHAUST	SPECIAL
	MECHANICAL (General)	OTHER
PROTECTIVE GLOVES Rubber		EYE PROTECTION Safety goggles
OTHER PROTECTIVE EQUIPMENT Rubber apron and/or other suitable protective clothing; face shield.		

SECTION IX - SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING
Avoid contact with eyes, skin and clothing. Wash thoroughly after handling. Avoid breathing dust or mist. Suitable for general indoor storage in a dry area. Storage for excessively long periods or at high temperatures may cause caking.
OTHER PRECAUTIONS
Keep container closed when not in use.

U.S. DEPARTMENT OF LABOR

WAGE AND LABOR STANDARDS ADMINISTRATION
Bureau of Labor Standards

Form No. 156-COS-4
May 1969

MATERIAL SAFETY DATA SHEET

PRODUCER'S NAME

PURCHASE ORDER NO.

SECTION I

PRODUCER'S NAME

Valley Chemical Specialties, Inc.

EMERGENCY TELEPHONE NO.

215 379-6411

ADDRESS (Number, Street, City, State, and ZIP Code)

311 Ryers Ave., Cheltenham, Pa. 19012

CHEMICAL NAME AND SYNONYMS

TRADE NAME AND SYNONYMS

CHEMICAL FAMILY

Mild Organic Acids

FORMULA

Valley A C 67

SECTION II—HAZARDOUS INGREDIENTS

PAINTS, PRESERVATIVES AND SOLVENTS	%	TLV (Parts)	ALLOYS AND METALLIC COATINGS	%	TLV (Parts)
PIGMENTS			BASE METAL		
CATALYST			ALLOYS		
VEHICLE			METALLIC COATINGS		
SOLVENTS			FILTER METAL PLUS COATING OR CORE FLUX		
ADDITIVES			OTHERS		
OTHERS					
HAZARDOUS MIXTURES OF OTHER LIQUIDS, SOLIDS, OR GASES				%	TLV (Parts)
Mild organic acids					

SECTION III—PHYSICAL DATA

BOILING POINT (°F.)	> 212 °F	SPECIFIC GRAVITY (H ₂ O=1)	1.258±.005
VAPOR PRESSURE (mmHg.)	18.0-19.0	PERCENT VOLATILE BY VOLUME (%)	N/A
VAPOR DENSITY (AIR=1)	.0018-.0019	EVAPORATION RATE (.....-1)	N/A
SOLUBILITY IN WATER	complete		
APPEARANCE AND ODOR	Clear yellow liquid	Mild, typical	

SECTION IV—FIRE AND EXPLOSION HAZARD DATA

FLASH POINT (Method Used)	N/A	FLAMMABLE LIMITS	N/A	LC ₅₀	LD ₅₀
EXTINGUISHING MEDIA	N/A				
SPECIAL FIRE FIGHTING PROCEDURES	N/A				
UNUSUAL FIRE AND EXPLOSION HAZARDS	N/A				

SECTION V - HEALTH HAZARD DATA

THRESHOLD LIMIT VALUE

Unknown - Non volatile

EFFECTS OF OVEREXPOSURE

Unknown - Non volatile

EMERGENCY AND FIRST AID PROCEDURES

In case of eye contact immediately flush eyes with plenty of water.
Call a physician. In case of skin contact wash thoroughly with water.

SECTION VI - REACTIVITY DATA

STABILITY

UNSTABLE

STABLE

X

CONDITIONS TO AVOID

Avoid contact with strong alkalines.

INCOMPATIBILITY (Materials to avoid)

alkaline materials

HAZARDOUS DECOMPOSITION PRODUCTS

None

HAZARDOUS
POLYMERIZATION

MAY OCCUR

WILL NOT OCCUR

X

CONDITIONS TO AVOID

SECTION VII - SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

Flush area with copious amounts of water.

WASTE DISPOSAL METHOD

Dilute with large amounts of water. Treat as a mild acid.

Valley AC 67 is biodegradable.

SECTION VIII - SPECIAL PROTECTION INFORMATION

RESPIRATORY PROTECTION (Specify type)

None

VENTILATION

LOCAL EXHAUST

X

SPECIAL

MECHANICAL (General)

OTHER

PROTECTIVE GLOVES

Recommended

EYE PROTECTION

Recommended

OTHER PROTECTIVE EQUIPMENT

SECTION IX - SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING

Avoid contact with eyes, skin, and clothing. Wash thoroughly after handling. Avoid freezing.

OTHER PRECAUTIONS

U.S. DEPARTMENT OF LABOR
Occupational Safety and Health Administration

Form Approved
OMB No. 44-R1387

no or reproduction without
written of OAKITE
PRODUCTS, INC. is prohibited.

MATERIAL SAFETY DATA SHEET

Required under USDL Safety and Health Regulations for Ship Repairing,
Shipbuilding, and Shipbreaking (29 CFR 1915, 1916, 1917)

October 4, 1977

SECTION I

MANUFACTURER'S NAME OAKITE PRODUCTS, INC.		EMERGENCY TELEPHONE NO. 201-464-6900
ADDRESS (Number, Street, City, State, and ZIP Code) 50 Valley Road, Berkeley Heights, New Jersey 07922		
CHEMICAL NAME AND SYNONYMS		TRADE NAME AND SYNONYMS Oakite 12
CHEMICAL FAMILY Alkali (Mild)	FORMULA Proprietary	

SECTION II - HAZARDOUS INGREDIENTS

PAINTS, PRESERVATIVES, & SOLVENTS	%	TLV (Units)	ALLOYS AND METALLIC COATINGS	%	TLV (Units)
PIGMENTS			BASE METAL		
CATALYST			ALLOYS		
VEHICLE			METALLIC COATINGS		
SOLVENTS			FILLER METAL PLUS COATING OR CORE FLUX		
ADDITIVES			OTHERS		
OTHERS					

HAZARDOUS MIXTURES OF OTHER LIQUIDS, SOLIDS, OR GASES	%	TLV (Units)
Not applicable		

SECTION III - PHYSICAL DATA

BOILING POINT (°F.)	Unknown	SPECIFIC GRAVITY (H ₂ O=1)	1.002
VAPOR PRESSURE (mm Hg.)	Unknown	PERCENT VOLATILE BY VOLUME (%)	N/A
VAPOR DENSITY (AIR=1)	Unknown	EVAPORATION RATE (_____=1)	N/A
SOLUBILITY IN WATER	Complete	pH (1/4% by volume to full strength)	9.5
APPEARANCE AND ODOR	Yellowish-green liquid; no odor.		

SECTION IV - FIRE AND EXPLOSION HAZARD DATA

FLASH POINT (Method used)	None.	FLAMMABLE LIMITS	N/A	Lel	Uel
EXTINGUISHING MEDIA	Will not burn or support combustion.				
SPECIAL FIRE FIGHTING PROCEDURES	N/A				
UNUSUAL FIRE AND EXPLOSION HAZARDS	None.				

SECTION V - HEALTH HAZARD DATA

THRESHOLD LIMIT VALUE

Not applicable

EFFECTS OF OVEREXPOSURE

Direct contact with eyes may cause irritation. Prolonged skin contact may cause irritation.

EMERGENCY AND FIRST AID PROCEDURES

For eyes, flush with plenty of water for at least 15 minutes; get medical attention if eyes are irritated. For skin, flush with water.

SECTION VI - REACTIVITY DATA

STABILITY

UNSTABLE

CONDITIONS TO AVOID

N/A

STABLE

X

INCOMPATIBILITY (Materials to avoid)

None known.

HAZARDOUS DECOMPOSITION PRODUCTS

None known.

HAZARDOUS
POLYMERIZATION

MAY OCCUR

CONDITIONS TO AVOID

N/A

WILL NOT OCCUR

X

SECTION VII - SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

Flush area with plenty of water.

WASTE DISPOSAL METHOD

Generally, no special treatment is necessary. Discharge according to federal, state and local regulations. Dilution with water may be necessary.

SECTION VIII - SPECIAL PROTECTION INFORMATION

RESPIRATORY PROTECTION (Specify type)

N/A

VENTILATION

LOCAL EXHAUST

SPECIAL

N/A

MECHANICAL (General)

OTHER

PROTECTIVE GLOVES

Rubber for prolonged contact.

EYE PROTECTION

Safety goggles if subject to splash.

OTHER PROTECTIVE EQUIPMENT

N/A

SECTION IX - SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING

Suitable for general indoor storage. Keep from freezing (freezes at 24°F., restores on thawing.) Keep container closed when

OTHER PRECAUTIONS

not in use. Do not get in eyes. Avoid prolonged skin contact. Wash thoroughly after handling.

Emerson and Historical Perspective

Pricing Proposal F.H.L

BUREAU OF THE MINT

ATTACHMENT C

8-23-73

FUNDING OBLIGATION - BY FISCAL YEAR

PLANNING SCHEDULE - NEW DENVER MINT

	1973	1974	1975	1976	1977	FY 1978	DOLLARS IN MILLIONS
SITE							
Acquisition	1.50						1.50
Development Work			2.50				2.50
Exterior Lighting, Landscaping & Miscellaneous					0.60		0.60
DESIGN SERVICES							
Production Process Design		0.30 ¹³					0.30
Site Development Drawings		0.14					0.14
Facility Building Design		0.86	0.55				1.41
Equipment Specs. and Survey							
Equipment Potential		0.08 ⁴					0.08
Equipment Procurements, Installation Drawings ¹³			0.30				0.30
BUILDING (S)							
Construction Cost				26.90			26.90
EQUIPMENT							
Equipment Cost			8.70		6.00		14.70
Equipment Installation Cost					3.15		3.15
CONSTRUCTION MANAGEMENT							
Design Review, Project Programming and Scheduling		0.62					0.62
Construction Supervision			1.70				1.70
Equipment Inst. Supervision					0.50		0.50
START-UP, RELOCATION AND TRANSITION						0.90	0.90
FUNDING REQUIREMENTS	1.50	2.00	13.75	26.90	10.25	0.90	55.30

Narrative Statement for Printing

BUREAU OF THE MINT

Construction of Mint Facilities

PROGRAM AND PERFORMANCE

The appropriation provides funds to acquire suitable sites, design and construction of buildings, furnishings and equipment necessary for operations of the Bureau of the Mint as authorized by 77 Stat. 129 and amended by 79 Stat. 256. In fiscal year 1972 an appropriation of \$1,500,000 was made for the purchase of a suitable site for the Denver Mint. The selection and purchase of this site are in process. The \$2,000,000 appropriated for fiscal year 1973 covers some of the costs of Architect-Engineer Design and drawings. A contract for these engineering services will be awarded in fiscal year 1973. Design and site acquisition activities will be continued during fiscal year 1974. Funds requested for fiscal year 1975, in the amount of \$20,780,000, will permit the Bureau of the Mint to proceed with timely construction and equipping of the new Denver Mint.

SUPPLEMENTARY SOURCE DOCUMENT (In thousands of dollars)

IDENTIFICATION CODE	Function	Line No.	Exp. (E) Loan (L)	Def. (D) Indef. (I)	Leg. (S) No leg. (N)	1973 1972 actual	1974 1973 estimate	1975 1974 estimate
15-25-1617-0-1-904								

A. ANALYSIS OF BUDGET AUTHORITY AND OUTLAYS

Budget authority	904	40		D	N	1,500 2,000	2,000 ---	20,780
Total.....						2,000 1,500	2,000	20,780 ---
Outlays	904	90				135 —	2,500 740	8,360
Total.....						135	740 2,500	8,360 ---
Memorandum entries:								
Appropriation to liquidate contract authority.....								
Loan repayments to miscellaneous receipts.....		98.43	L					
Limitations:								
		9						
		9						
		9						
		9						

B. DISTRIBUTION OF OUTLAYS

From new authority—current.....	311							
From new authority—permanent.....	312							
From obligated balances.....	313					135	740-267	5,600
From unobligated balances.....	314						2,233	2,760
From new appropriations to liquidate contract authority (memo entry).....	315					()	()	()

NEW DENVER MINT

1973

1974

1975

15-25-1617-0-1-904

Function

Line No.

MC

Character code

~~1972~~
actual

~~1973~~
estimate

~~1974~~
estimate

C. GROSS CASH TRANSACTIONS (Public enterprise and trust revolving funds)

Gross outlays

511

Total.....

Applicable receipts

512

Total.....

D. CHARACTER CLASSIFICATION

Budget authority

904

1

1310-14

~~1,500~~

~~2,000~~

~~20,780~~

2,000

20,780

Total.....

2,000

20,780

~~1,500~~

~~2,000~~

Outlays

904

2

1310-14

~~135~~

~~2,500~~

~~8,360~~

740

8,360

Total.....

740

8,360

~~135~~

~~2,500~~

DENVER MINT ONLY

TREASURY DEPARTMENT

BUREAU OF THE MINT Construction of Mint Facilities

Program and Financing (in thousands of dollars)

21,000

15-25-1617-0-1-904	Costs to this appropriation				Analysis of 1975 financing			Appropriation required, 1975	Appropriation required to complete
	Total Estimate	To June 30, 1972	1973 Actual	1974 Estimate	1975 Estimate	Deduct selected resources and unobligated balance, start of year	Add selected resources and unobligated balance, end of year		
Program by activities:									
1. Architectural and Engineering Plans	3,700	---	2,000	2,000	1,700	---	---	1,700	---
2. Purchase of land	5,150	2,627	1,530	1,692	---	---	---	---	---
3. Building construction	43,120	19,551	---	---	3,400	---	---	3,400	---
4. Purchase of equipment	42,764	47,558	62	491	15,680	---	132	15,680	---
Total program costs	54,080	39,736	3,500	4,183	20,780	---	132	20,780	29,800
Change in selected resources 1/			---	---	---				
Total obligations			38	4,269	---				

1/ Selected Resources as of June 30 are as follows: Unpaid, undelivered orders, 1971, \$73; 1972, \$14; 1973, \$0; 1974, \$0.

TREASURY DEPARTMENT
BUREAU OF THE MINT
CONSTRUCTION OF MINT FACILITIES

NEW DENVER MINT

FINANCING AND OUTLAYS (in thousands of dollars)

Identification code	1973 1972 actual	1974 1973 estimate	1975 1974 estimate
15-25-1617-0-1-904			
10 Total obligations (from program schedule).....	3,500 ³³	4,169 ⁻	20,780 ⁻⁻⁻
Financing:			
Receipts and reimbursements from:			
11 Federal funds (-).....			
13 Trust funds (-).....			
14 Non-Federal sources (-).....			
17 Recovery of prior year obligations (-).....			
21 Unobligated balance available, start of year (-).....	-1,500 ⁸³⁴	-2,301	-132
24 Unobligated balance available, end of year.....	2,301	132	132
25 Unobligated balance lapsing.....			
26 Unobligated balance rescinded (-).....			
40 Budget authority.....	1,500 ^{2,000}	2,000	20,780
Relation of obligations to outlays:			
71 Obligations incurred, net.....	3,500 ³³	4,169 ⁻	20,780
72 Obligated balance, start of year.....	369	3500 ²⁶⁷	2,760 ^{1,936}
74 Obligated balance, end of year (-).....	-3,500 ²⁶⁷	-2,760 ^{1,936}	-15,180 ^{1,936}
77 Adjustments in expired accounts.....			
90 Outlays.....	135 ⁻	2,500 ¹⁴⁰	8,360

TREASURY DEPARTMENT
BUREAU OF THE MINT
CONSTRUCTION OF MINT FACILITIES

NEW DENVER MINT

OBJECT CLASSIFICATION (in thousands of dollars)

Identification code	1973 1972 actual	1974 1973 estimate	1975 1974 estimate
15-25-1617-0-1-904			
Personnel compensation:			
11.1 Permanent positions			
11.3 Positions other than permanent			
11.5 Other personnel compensation			
11.8 Special personal services payments			
Total personnel compensation			
Personnel benefits:			
12.1 Civilian			
13.0 Benefits for former personnel			
21.0 Travel and transportation of persons			
22.0 Transportation of things			
23.0 Rent, communications, and utilities			
24.0 Printing and reproduction			
25.0 Other services	2,000 31	3,731	1,200
26.0 Supplies and materials			
31.0 Equipment	2	438	15,680
32.0 Lands and structures	1,500	- - -	3,400
33.0 Investments and loans			
41.0 Grants, subsidies, and contributions			
42.0 Insurance claims and indemnities			
43.0 Interest and dividends			
44.0 Refunds			
99.0 Total obligations	33 3,500	4,169 - - -	20,780

NEW DENVER MINT

DEPARTMENT OF THE TREASURY

Appropriation: Construction of Mint Facilities, Bureau of the Mint

1974

ANALYSIS OF AUTHORIZED LEVEL FOR FISCAL YEAR 1973
(In Thousands of Dollars)

1973 Appropriation Enacted by Congress ----- Amount
 Estimates, 1975 ----- None 20,780

DIGEST OF BUDGET ESTIMATES BY ACTIVITIES FISCAL YEAR 1974
(Dollars in Thousands)

	APPROPRIATION 1972 1973		APPROPRIATION 1973 1974		APPROPRIATION 1974 1975		Increase or decrease(-) for 1974				
	Av. Pos.	Amount	Av. Pos.	Amount	Av. Pos.	Amount	Total Changes		Program Changes		Other Changes
							Av. Pos.	Amount	Av. Pos.	Amount	
1. Architectural and Engineering Plans	---	2,000	---	2,000	---	1,700	---	1,700	---	1,700	---
2. Acquisition of Land	---	1,500	---	---	---	---	---	---	---	---	---
3. Building Con- struction	---	---	---	---	---	3,400	---	3,400	---	3,400	---
4. Purchase of Equip- ment	---	---	---	---	---	15,680	---	15,680	---	15,680	---
Total Appropriation or Estimate	---	2,000 1,500	---	2,000	---	20,780	---	20,780	---	20,780	---

NEW DENVER MINT

TREASURY DEPARTMENT

APPROPRIATION: Construction of Mint Facilities, Bureau of the Mint

1975

SUMMARY EXPLANATION OF CHANGES FOR FISCAL YEAR 1974 LEVELS

	Activity 1 Amount	Activity 2 Amount	Activity 3 Amount	Activity 4 Amount	Total Amount
<u>Program Changes:</u>					
<u>Increase:</u>					
1. To provide for construction supervision	1,700	---	---	---	1,700
2. To provide for the purchase of long lead time equipment	---	---	3,400	---	3,400
3.				15,680	15,680
<u>Other Changes:</u>					
Reductions, non-recurring costs and savings					
1. Reduction in Architect-Engineering requirements under Fiscal Year 1973 requirements	2,000	---	---	---	2,000
¹⁹⁷⁵ Total, Increase 1974 compared with Proposed Authorized Level for 1973 ¹⁹⁷⁴	1,700 2,000	---	3,400 ---	15,680 ---	20,780 2,000

1. To provide for preparation of equipment installation drawings by the Architect-Engineer and Architect-Engineer assistance on equipment procurements.

2. To provide for site development work and construction supervision.

3. To provide for the purchase of long lead time equipment.

1-9-73

SUMMARY JUSTIFICATION OF FISCAL YEAR 1975 BUDGET ESTIMATES

Based upon extensive studies of estimated coin requirements in relation to Mint manufacturing capabilities, it has been determined that a new Mint must be fully operational by 1980 in order to meet the public need for coins.

It is estimated that the total cost of a new facility at Denver, including site acquisition, architect and engineering services, building construction, and equipment purchase and installation, will be approximately \$54.1 million. Required amounts will be requested in appropriations as the need arises to finance the various phases of the project.

Fiscal Year 1972

An appropriation of \$1.5 million was approved for Fiscal Year 1972 for the acquisition of a site for a new Mint in Denver and the Treasury Department is currently working with the General Services Administration to obtain the required land. It is anticipated that the \$1.5 million will be obligated in Fiscal Year 1973 and all actions pertaining to site acquisition will be completed by August 1, 1974.

Fiscal Year 1973

An appropriation of \$2,000,000 was approved in Fiscal Year 1973 to enable the Mint to enter into a contract for architect and engineering services necessary to permit the construction and equipping of the facility in a timely manner. This contract, which will be awarded late in Fiscal Year 1973, will provide for facility design covering: (1) review and validation of the facility criteria prepared by the Bureau of the Mint; industrial process design and layout for the new Mint; identification of and preparation of bid documents for the procurement of long lead time production equipment, and site development and building design.

Fiscal Year 1974

An appropriation was not requested for this project for Fiscal Year 1974. Work on the project will continue during Fiscal Year 1974 using prior years' appropriations. This work will consist of continuation of site acquisition activities and architect engineering services as discussed under Fiscal Year 1973 above.

Fiscal Year 1975

In Fiscal Year 1975 an appropriation of \$20.78 million is requested to enable the Mint to enter into contracts for long lead time production equipment, for preparation of equipment installation drawings, for site development work, and for construction supervision. Funds for building construction and for equipment installation are scheduled to be requested in Fiscal Year 1976. Funds requested for Fiscal Year 1975 are necessary to permit the construction and equipping of the facility in a timely manner.

GENERAL INFORMATION

Legislation authorizing the construction and equipping of buildings, and the acquisition of suitable sites required in connection with the operations of the Bureau of the Mint is contained in 31 U.S.C. 291-294. The Philadelphia Mint was constructed under this Law. Legislation increasing the authorized limit and extending the dates during which appropriations may be enacted is being requested to encompass the requirements for a new Mint in Denver.

In May of 1969 a Treasury Department study was completed concluding that a new Mint facility would be required to be in operation by 1980 to meet projected coinage requirements. Other studies corroborate that finding.

Treasury has also concluded that the new facility should be located in Denver and that it should be undertaken without delay to achieve the objective of a new facility to be in operation by 1980.

Current studies, including a recent Treasury Department study, indicate the total demand for coins by 1980 is estimated to reach 12.7 billion coins per year. Considering the indicated demand by the anticipated time of completion of this facility, it will have the capacity to produce at least 7.7 billion coins per year on a two-shift basis.

In addition, floor space will be provided to allow the coinage capacity of this new Mint to be increased to eleven (11) billion coins per year on a two-shift basis and fifteen (15) billion coins per year on a three-shift basis. Thus, the Philadelphia Mint and the new Denver Mint will satisfy demands through the 1980's.

If Federal Reserve forecasts prove correct, the demands by 1978 will exceed the combined capacity of Philadelphia and the present Denver Mint. Therefore, while awaiting completion of the new Denver facility in 1980, the San Francisco facility will be utilized to satisfy the difference between the demand and the combined Philadelphia and Denver capacities.

A planning schedule which has been made a part of the General Information statement, based on the latest information developed on plans for a new Denver Mint, projects preliminary funding requirements by fiscal year through the entire scope of the project.

Funds were appropriated in the amount of \$1,500,000 for Fiscal Year 1972 to cover the cost of site acquisition and in the amount of \$2,000,000 for Fiscal Year 1973 to cover architect-engineering services.

Because of the delay in obtaining a site for the new Mint in Denver, appropriations were not requested for Fiscal Year 1974.

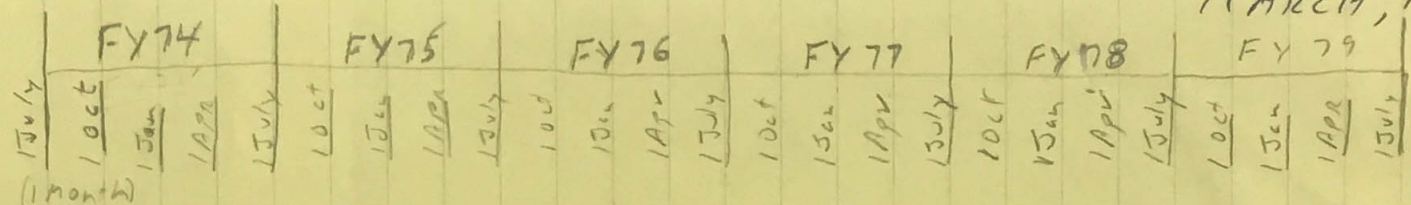
Funds in the amount of \$20,780,000 are requested for Fiscal Year

FUNDING OBLIGATION - BY FISCAL YEAR

PLANNING SCHEDULE - NEW DENVER MINT

COST ELEMENT	1973	1974	1975	1976	1977	1978	FY 1979	DOLLARS IN MILLIONS
SITE								
Acquisition	1.50							1.50
Development Work			2.00					2.00
ARCHITECT-ENGINEER								
Criteria Development	0.06							0.06
Production Process Design	0.30							0.30
Site Development Dwgs.	0.12							0.12
Facility Bldg. Design	1.44							1.44
Equipment Specs. & Survey								
Equipment Potential	0.08							0.08
Equipment Procurement, Bid								
Review, Installation Dwgs.			1.70					1.70
BUILDING (s)								
Construction Cost				21.00				21.00
EQUIPMENT								
Equipment Cost			15.68					18.00
Equipment Installation Cost				5.00	2.32			5.00
CONSTRUCTION MANAGEMENT								
Construction Supervision			1.40					1.40
Equipment Inst. Supervision					0.60			0.60
START-UP AND RUN-IN						0.60		0.60
RELOCATION AND TRANSITION							0.28	0.28
FUNDING REQUIREMENTS	3.50	--	20.78	26.00	2.92	0.60	0.28	54.08

MARCH, 1973



A/E SERVICES

Criteria Review

PROCESS DESIGN

EQUIP PROCUREMENT DOCUMENTS

SITE/BLDG DESIGN

INSTALLATION DRAWINGS

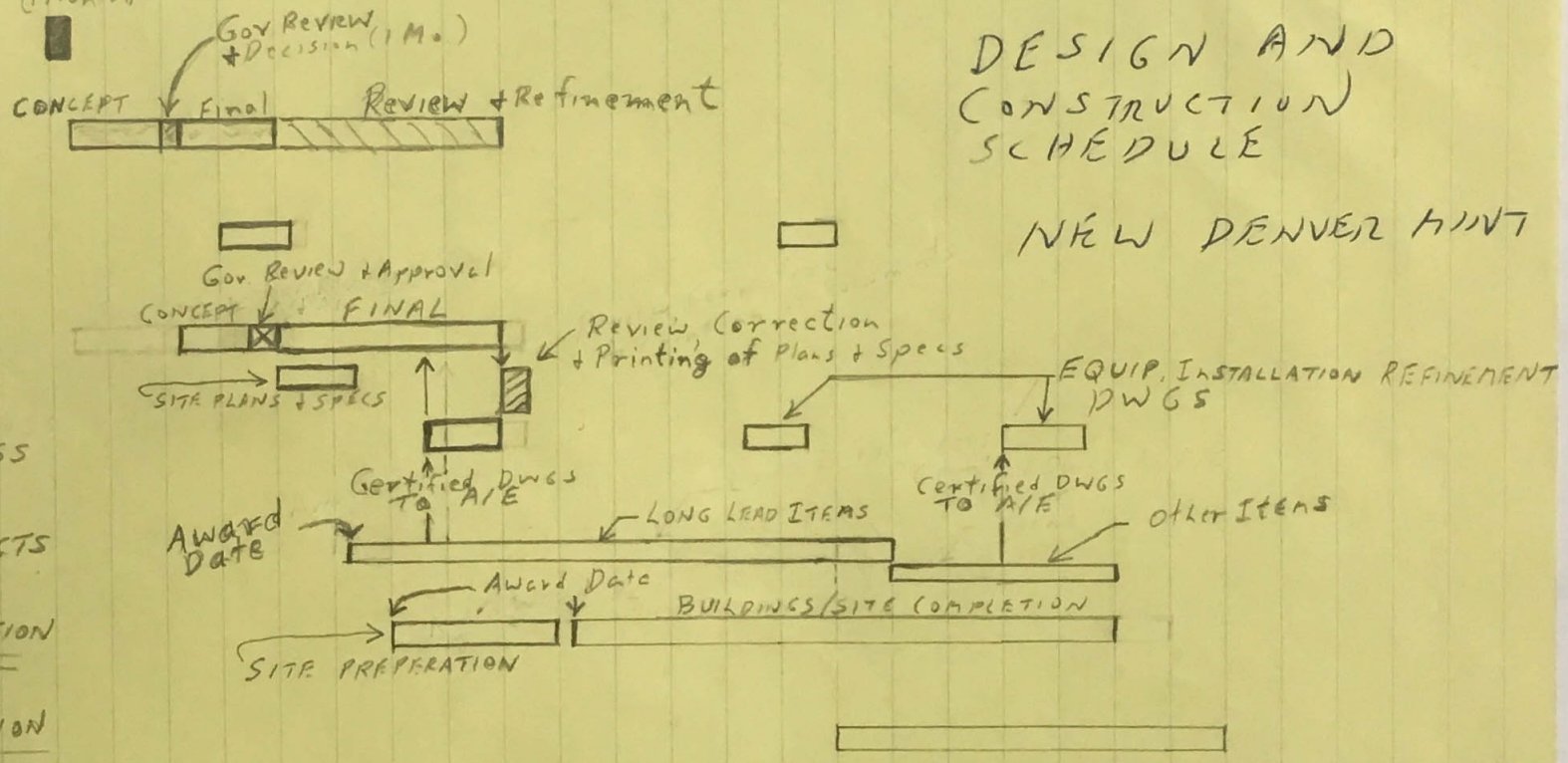
EQUIP PROC. CONTRACTS

SITE/BUILDING CONSTRUCTION

EQUIPMENT INSTALLATION

DESIGN AND CONSTRUCTION SCHEDULE

NEW DENVER HUNT



PLANNED FUNDING:	FY 73	A/E SERVICES
	FY 75	EQUIP. PROCUREMENT, A/E SERVICES, SITE PREPERATION, CM
	FY 76	BUILDING CONSTRUCTION, EQUIPMENT INSTALLATION,
	FY 77	EQUIP. PROCUREMENT
	FY 78	START-UP
	FY 79	RELOCATION AND TRANSITION

GENERAL SERVICES ADMINISTRATION

Public Buildings Service
Washington, D.C. 20405

DATE: October 12, 1971
REPLY TO: Chief Cost Engineering Branch, PMCE
ATTN OF:
SUBJECT: Budget Estimate Summary Procedures
Supplemental Tables

All Cost Engineering Branch Personnel

Reference is made to my memorandum dated September 1, 1971, relating to the Budget Estimating Procedure and furnishing certain Design and Supervision Cost tables.

The following tables, omitted from the September 1, 1971, memorandum, are attached. Please incorporate the pages with those furnished you earlier and use them as provided for in the procedure.

Table B-2 GSA Review Costs (Direct Appropriation)
Table B-3 GSA Review Costs (Transfer Appropriations)
Table C-1 Surveys and Tests
Table C-2 CPM Expense
Table G-2 Management and Inspection Costs (Direct Appropriation)
Table G-3 Management and Inspection Costs (Transfer Appropriation)
Table H Material Testing

James E. Sorg
JAMES E. SORG
Chief, Cost Engineering Branch

Enclosures

Mr. Hathorn
15-21456
73



DATE: September 1, 1971

REPLY TO
ATTN OF: Chief, Cost Engineering Branch - PMCE

SUBJECT: Budget Estimate Summary Procedure

All Cost Engineering Branch Personnel

Attached is a Budget Estimate Summary Procedure outlining the use of the "Project Cost Estimate" GSA Form 7378 and distributing the following GSA design and supervision cost tables:

Table A -	Architect Engineer Fees
Table B-1 -	GSA Design & Review Costs (R&I/Reimb)
Table D -	Reproduction Costs
Table E -	Invitation and Bid Expense
Table F -	Travel Expenses
Table G-1 -	Management & Inspection Costs (R&I/Reimb)

The above tables provide the information necessary to complete the Project Cost Estimate form for R & I Funded and Reimbursable Funded projects. Additional tables referred to in the procedure for Direct and Transfer funded projects will be issued in the future.

In addition to complying with the subject procedure, every estimator is reminded to:

- (1) Round off amounts on each line of the GSA Form 7378 to the nearest \$50 when total line amount is less than \$1,000 and nearest \$100 in larger totals.
- (2) All work papers and back-up sheets to estimate must be initialed and dated.
- (3) Devote close attention to writing a complete, detailed and concise project scope. List conditions and exclusions, list drawings or sketches, and etc.
- (4) Develop cost estimate to the greatest degree of detail possible on the information and data available.

James E. Sorg

JAMES E. SORG
Chief, Cost Engineering Branch

Enclosure

PROCEDURE
BUDGET ESTIMATE SUMMARY

All budget type estimates are to be summarized using GSA Form 7378, "Project Cost Estimate." This form has been developed to provide a standardized format on which budget estimates may be published and distributed.

The form is designed to provide the necessary information required in an estimate summary and with sufficient space to provide for GSA-PO breakouts and other necessary breakouts.

The following procedure will be followed in preparing the Project Cost Estimate:

(1) The type of estimate will be written above the "Project Cost Estimate" title block. (i.e., Preliminary, Final, Change Order Budget, etc.)

(2) Contract No. - The assigned contract number will be written out complete in the "Contract Number" block when number is available.

GS-00B-0----

GS-02B-1----

GS-03B-1----

This step is important since we are currently using three series of contract numbers. Eventually, we will phase over to GS-00B----- numbers, but until that is accomplished the complete contract number is to be used.

(3) Expiration Date - The month and year the estimate is escalated to in line 13b.

(4) Project - Represents the short title description (i.e., lobby improvements, airconditioning, etc.) In the case of new buildings, "New Building" will be used.

(5) Project No. - The project number will be noted when it is available. Generally the project number can be found in the title block on drawings and the work order listing charts.

(6) Funding Source - The majority of our projects are funded from the following sources. This source will be noted in this block.

- a. R&I (141)
- b. Reimbursable (456)
- c. Direct (174)
- d. Transfer ---

(7) Building - Number of building in which work is to be accomplished.

(8) Location - City and State in which building is located.

(9a) Gross Area - The total building area where work is being accomplished. When contract work cannot be defined in building area, other units of measurement should be used (i.e., painting - surface area, airconditioning - tons, etc.).

(9b) Net Area - To be used primarily on new building estimates.

(9c) Net Assemblable Area - To be used primarily on new building estimates.

(10) Project Scope - Represents a complete written summary of work to be accomplished. It is important that the scope be clearly defined and identified with drawings, sketches, etc., when available.

(11) Estimated Site Cost (E.S.C.) - This section only applies to new construction and transfer projects and will be filled out by Section Chief or Branch Chief when applicable.

(12) Estimated Design and Review Cost (EDRC) - Represents the costs for designing and bidding a project. All EDRC items are directly related to the estimated contract amount and estimated construction cost as discussed below.

(12a) Architect-Engineer Fee (Table A) - On those jobs which will be designed by an A-E, the A-E Fee must be included on line 12a. Generally, most projects exceeding \$200,000 will be A-E designed. Another A-E design indicator is if the estimate request was initiated by a member of PMCD's Professional Services staff.

The A-E Fee is based upon the current estimated contract amount (line 13a). The A-E Fee to be used on line 12a may be determined by finding the A-E amount on Table A which corresponds to the current estimated contract amount (line 13a).

.(12b) GSA Review Cost (Tables B1, B2 & B3) - This category covers GSA's salary costs during the design phase. Since the funding source determines the amount, three tables discussed below are necessary:

Table B1 (R&I Funded & Reimbursable Funded)

In-House Design - (Projects designed by Design Branch.) The amount for GSA review (line 12b) is related to the Estimated Construction Cost (line 13f). The amount to be used on line 12b may be determined by finding the design and review cost in Table B1 which corresponds to the Estimated Construction Costs (line 13f).

A-E Designed Jobs - The amount for GSA review (line 12b) will be determined in the same manner as described for In-House Design except it will be reduced by the A-E Fee used on Line 12a.

Table B2 - (Direct Appropriation)

(Table will be distributed in near future). The amount for GSA review (line 12b) to be used on Direct appropriated projects will be determined by finding the Design and Review cost in Table B2 which corresponds to the Escalated Contract Award Amount (line 13f). No A-E adjustment is necessary when using this table.

Table B3 - (Transfer Appropriations)

(Table will be distributed in near future). The amount for GSA review (line 12b) to be used on Transfer appropriated projects will be determined by finding the Design and Review cost in Table B3 which corresponds to the Escalated Contract Award Amount (line 13c). No A-E adjustment is necessary when using this table.

(12c) Survey & Tests (Tables C1 & C2)

(Tables to be distributed in near future).

Table C2 - (Direct & Transfer Funded Projects) - Table C2 represents the amount of money to cover soil tests, core boring, and other tests associated with new construction type projects. This table also includes money for CPM consultant required for projects over \$1,000,000.

The amount to be included on line 12c will be determined by finding the amount in Table C2 which corresponds with the Estimated Construction Cost (line 13f).

Table C1 - (R&I and Reimbursable Funded Projects) - Since soil tests, core borings, etc., are not applicable to R&I and Reimbursable funded projects, Table C1 represents the cost for a CPM consultant on projects in excess of \$1,000,000.

(12d) Reproduction Costs (Table D) - Table D represents the cost to reproduce drawings and specifications for all jobs during the design phase and bidding phase.

The amount to be included on line 12d will be the amount in table D corresponding with the Estimated Construction Cost (line 13f).

(12e) Invitation & Bidding Expense (Table E) - Table E represents the cost of advertising and mailing of bid invitations, etc.

The amount to be included on line 12e will be the amount in table E corresponding with the Estimated Construction Cost (line 13f).

(12f) Travel (Table F) - Table F covers travel costs of GSA personnel. Travel will only be included in estimates outside the Metropolitan Washington Area.

In addition where the A-E for a Metropolitan Washington job is located outside the Washington Area, travel cost will be included in the estimate.

The amount to be included on line 12f will be the amount in table F (Design Stage) corresponding to the Estimated Construction Cost (line 13f).

(12g) Total Estimated Design and Review Cost (EDRC) - This represents the total cost to GSA for design of the project and represents the sum of lines 12a through 12f.

(13) Estimated Construction Cost (E.C.C.)

The Estimated Construction Cost (E.C.C.) represents the costs directly attributed to construction or alterations as discussed below:

(13a) Current Estimated Contract Amount (Line 13a)

The Current Estimated Contract Amount (CECA) is the amount developed through a quantity take-off, square foot analysis or other acceptable method which represents the fair and reasonable cost to perform the contract work on the day the estimate is completed.

(13b) Escalation (Line 13b) - Represents increases in the current estimated contract amount resulting from inflation of the economy. Escalation of the CECA (line 13a) can be accomplished by one of two methods.

(1) Where the CECA estimate is current and bids will not be requested until some future date, the CECA must be increased at the prescribed escalation rate to the date contract capability is anticipated. Generally this date can be calculated by determining (1) the date design is scheduled for completion plus two months or (2) estimating a reasonable time for design plus two months. If neither of the above is possible escalation to the following October should be included.

Current escalation is anticipated to be:

- (a) Sept. - Nov. 1971 - None due to price freeze
- (b) December 1971 - 1%
- (c) Calendar Year 1972 - 10%
- (d) Calendar Year 1973 - 10%
- (e) Calendar Year 1974 - 8%
- (f) Calendar Year 1975 - 6%

(2) Estimates which were completed in the past may be escalated by computing the percentage increase in the Engineers News Record (ENR) building cost index between the current month and the month the estimate was completed. This method is referred to as updating.

(13c) Estimated Contract Award Amount ()

This is the sum of lines 13a and 13b and represents the estimated contract award amount (ECAA) at the time a contract award is anticipated. The date the estimate is escalated to should be noted in the "()" on line 13c.

(13d) Contingencies (Line 13d)

Contingencies is an amount the award amount is increased by to cover change orders resulting from errors and omissions in the contract drawings and specifications. The following are the prescribed percentages to be used:

- (1) R&I - Reimbursable Projects - 7%
- (2) New Construction - Transfer Projects - 5%

(13e) Reservations (Line 13e)

Reservations items are normally associated with new buildings and represent costs of items not included in the basic construction contract such as lamps, landscaping, fine arts, carpeting and moveable partitions.

Close attention must be devoted to project reservation items to insure all items are adequately covered. The following items should be considered in every new building estimate whether it is Direct or Transfer funded:

(1) Lamps & Tubes - It has been GSA's policy for several years to supply the lamps and tubes for light fixtures through Federal Supply. Lamps and tube reservation is generally computed at 0.2% of the escalated contract award amount (line 13c). While reservations are generally attributed to new buildings, a reservation of lamps and tubes should be included in R&I and reimbursable projects involving new lighting at the same 0.2% rate.

(2) Fine Arts - Paintings, sculpture, fountains, etc., are provided as a rule in new Federal buildings and is a usual reservation item. The amount to be included is 0.5% of the Escalated Contract Award Amount (line 13c.)

(3) Landscaping - Since landscaping of new buildings is accomplished by separate contract, after construction is completed, an amount equal to 0.5% of the Escalated Contract Award Amount will be included in the reservation items.

(4) Moveable Partitions - Office layouts are not usually firmed up until construction is near completion. In order to minimize change orders, etc., GSA is awarding separate partition contracts a few months before the building is scheduled for occupancy and must be funded as a reservation item. The amount to be included under reservations may be determined by using 10% of the net building area as the linear footage of partitions to be required and multiplying this footage by an appropriate partition unit price.

(5) Case & Seals - An allowance of \$5,000 for projects less than \$10 million and \$10,000 for projects over \$10 million will be included in reservations for purchase of U.S. Seal and Case to be installed in new building.

(6) Other - Numerous other items such as carpeting, venetian blinds, auditorium seating and/or equipment, lockers, or special laboratory equipment, etc., may be necessary for the building. These needs should be investigated at the time the preliminary estimate is prepared and an appropriate value be included in reservations.

Computation for and a listing of reservation items is required back-up data for the Project Cost Estimate, GSA 7378.

7
(13f) Total Estimated Construction Cost

This line represents the total cost of contract work of the project and is the sum of lines 13c, 13d and 13e:

(14) Estimated Management and Inspection Cost (EMIC)

This section represents the costs to GSA for administering and inspecting the construction contract including material testing costs and incidental travel.

(14a) Contract Management and Inspection Cost

This category covers GSA's salary costs during the construction phase. In some cases it includes the A-E supervision costs in addition to the GSA salary costs on those projects having A-E construction supervision. As in ERDC costs, the project funding source determines the amount to be used on line 14a as discussed below.

Table G-1 (R&I Funded and Reimbursable Funded)

The amount for GSA management and inspection costs (line 14a) to be used for R&I Funded and Reimbursable Funded projects will be determined by finding the management and inspection cost in Table G-1 which corresponds to the Estimated Construction Cost (line 13f).

Table G-2 (Direct Appropriations)

(Table will be distributed in near future).

The amount for contract management and inspection costs to be used on line 14a will be determined by finding the "M&I" cost in Table G which corresponds to the E.C.C. (line 13f).

Table G-3 (Transfer Funded Projects)

(Table will be distributed in near future).

The amount for contract management and inspection costs to be used on line 14a will be determined by finding the "M&I" cost in Table G which corresponds to the Escalated Contract Award Amount (line 13c).

(14b) Material Testing (Table H)

(Table will be distributed in near future)

This table will apply to new construction and transfer projects only. The table sets up money in the project account to pay for concrete sampling and testing, structural steel tests, soils testing and other material testing required during the construction phase.

The amount for material testing to be used on line 14b will be determined by finding the Material Testing Cost in Table H which corresponds to the E.C.C. (line 13f).

• (14c) Travel (Table F)

• As discussed in paragraph 12f above, Table F covers travel costs of GSA personnel. Travel costs for the construction phase will only be included on projects outside the Metropolitan Washington Area.

The amount to be included on line 14c for travel will be the amount in Table F (Construction Stage) corresponding to the E. C. C. (line 13f).

(14d) Total Estimated Management and Inspection Cost (EMIC)

This represents the total cost to GSA for supervision and inspection of the construction contract and is the sum of lines 14a, 14b and 14c.

(15) Estimated Total Project Cost (ETPC) line 15

The ETPC represents the total funding required for a project. The amount to be used on line 15 is the sum of lines 11e, 12g, 13f and 14d.

(16) Estimated By - The names of the individuals preparing the estimate will be noted in this block and they will initial by their names on the original typed copy of the GSA Form 7378.

(16a) Date - Date Form 7378 is typed.

(17) Approved By - The Section Chief will review the estimate package to assure estimate is properly supported with work papers, back-up information, and that summary is properly filled in. After checking, he will initial in the left side of the "approved by" block and forward to the Branch Chief for approval.

(17a) Date - This block will be date stamped by the clerical staff with the date the estimate is approved by the Branch Chief.

PROJECT COST ESTIMATE

PROJECT		CONTRACT NO. (2)	EXPIRATION DATE (3)
(4) BUILDING		PROJECT NO. (5)	FUNDING SOURCE (6)
(7)		LOCATION (8)	
AREA (9)	GROSS (a)	NET (b)	NET ASSIGNABLE (c)
(10) PROJECT SCOPE			

(11) ESTIMATED SITE COST (ESC)	
a LAND COST	\$
b APPRAISAL, LEGAL FEES, ETC.	\$
c SURVEY	\$
d DEMOLITION, SITE PREPARATION	\$
e TOTAL ESTIMATED SITE COST	\$
(12) ESTIMATED DESIGN AND REVIEW COST (EDRC)	
a ARCHITECT-ENGINEER FEE	\$
b GSA REVIEW COST	\$
c SURVEY AND TESTS	\$
d REPRODUCTION	\$
e INVITATION AND BID EXPENSE	\$
f TRAVEL	\$
g TOTAL ESTIMATED DESIGN AND REVIEW COST	\$
(13) ESTIMATED CONSTRUCTION COST (ECC)	
a CURRENT ESTIMATE CONTRACT AMOUNT	\$
b ESCALATION TO	\$
c ESTIMATED CONTRACT AWARD AMOUNT (	\$
d CONTINGENCIES	\$
e RESERVATIONS	\$
f TOTAL ESTIMATED CONSTRUCTION COST	\$
(14) ESTIMATED MANAGEMENT AND INSPECTION COST (EMIC)	
a CONTRACT MANAGEMENT AND INSPECTION COST	\$
b MATERIAL TESTING	\$
c TRAVEL	\$
d TOTAL ESTIMATED MANAGEMENT AND INSPECTION COST	\$

(15) ESTIMATED TOTAL PROJECT COST (ETPC)	\$
(16) ESTIMATED BY (16a)	DATE (17a)
(17) BY	DATE (17a)

TABLE A

ARCHITECT ENGINEER FEES

Escalated Contract
Award Amount

A/E Fee

Escalated Contract
Award Amount

A/E

\$ 100,000	\$ 6,000
200,000	12,000
300,000	18,000
400,000	24,000
500,000	30,000
600,000	36,000
700,000	41,600
800,000	47,000
900,000	52,300
1,000,000	57,600
2,000,000	108,600
3,000,000	157,800
4,000,000	205,600
5,000,000	252,700
6,000,000	299,000
7,000,000	344,900
8,000,000	390,200
9,000,000	435,300
10,000,000	480,000

\$ 15,000,000
20,000,000
25,000,000
30,000,000
35,000,000
40,000,000
45,000,000
50,000,000
55,000,000
60,000,000
65,000,000
70,000,000
75,000,000
80,000,000
85,000,000
90,000,000
95,000,000
100,000,000

\$ 70 ⁰⁰
91 ⁰⁰
1,11 ⁰⁰
1,33 ⁰⁰
1,54 ⁰⁰
1,74 ⁰⁰
1,94 ⁰⁰
2,14 ⁰⁰
2,35 ⁰⁰
2,55 ⁰⁰
2,74 ⁰⁰
2,94 ⁰⁰
3,14 ⁰⁰
3,33 ⁰⁰
3,53 ⁰⁰
3,72 ⁰⁰
3,92 ⁰⁰
4,11 ⁰⁰
00
00
00
00
00
00

add(0)

Call Wilbur Coyle GSA for more info

TABLE B-1

GSA DESIGN & REVIEW COSTS

from architect to GSA

R & I (141)/ REIMBURSEABLE (456)

Estimated Construction Cost	Design & Review Cost *	Estimated Construction Cost	Design & Review Cost
2,000	\$ 400	\$ 300,000	\$ 23,400
3,000	600	400,000	31,200
4,000	800	499,999	39,000
5,000	1,000	500,000	36,500
6,000	1,200	600,000	43,800
7,000	1,400	700,000	51,100
8,000	1,600	800,000	58,400
9,000	1,800	900,000	65,700
9,999	2,000	1,000,000	73,000
10,000	1,700	2,000,000	146,000
20,000	3,400	3,000,000	219,000
30,000	5,100	4,000,000	292,000
40,000	6,800	5,000,000	365,000
49,999	8,500	6,000,000	438,000
50,000	6,300	7,000,000	511,000
60,000	7,600	8,000,000	584,000
70,000	8,800	9,000,000	657,000
80,000	10,100	10,000,000	730,000
90,000	11,300	15,000,000	1,095,000
99,999	12,600	20,000,000	1,460,000
100,000	7,800	25,000,000	1,825,000
200,000	15,600	30,000,000	2,190,000

* Reduce this amount by A/E Fee amount on A/E designed jobs.

Elderly Fund - aging funds to "cre"ing m.
if fund is enough GSA must cover
GSA will aging direct not thru m.
put Hold - GSA 5-14-10

Table B - 2
GSA Review Costs
Direct Appropriations

<u>Estimated</u> <u>Constr. Cost</u>	<u>Review</u> <u>Cost</u>	<u>Estimated</u> <u>Constr. Cost</u>	<u>Review</u> <u>Cost</u>
\$ 100,000	\$10,000	\$ 7,000,000	\$ 60,500
200,000	15,000	8,000,000	63,000
300,000	20,000	9,000,000	65,500
400,000	23,000	10,000,000	67,000
500,000	25,000	15,000,000	78,000
600,000	27,000	20,000,000	88,500
700,000	29,000	25,000,000	100,000
800,000	30,500	30,000,000	110,000
900,000	32,000	35,000,000	114,500
1,000,000	33,500	40,000,000	119,000
1,500,000	39,000	45,000,000	123,500
2,000,000	43,000	50,000,000	128,000
2,500,000	46,500	60,000,000	136,500
3,000,000	49,000	70,000,000	144,500
3,500,000	51,000	80,000,000	152,000
4,000,000	53,000	90,000,000	159,000
4,500,000	54,500	100,000,000	165,000
5,000,000	56,000	110,000,000	181,000
6,000,000	58,000	120,000,000	197,000

Confer appropriate money to GSA.

Table B - 3
GSA Review Costs
Transfer Appropriations

money goes from Congress to GSA
by report of another agency only
for new large buildings

<u>Escalated</u> <u>Contract Award</u> <u>Amount</u>	<u>GSA Review</u> <u>Cost</u>	<u>Escalated</u> <u>Contract Award</u> <u>Amount</u>	<u>GSA Review</u> <u>Cost</u>
\$ 100,000	\$ 4,000	\$ 7,000,000	\$ 47,100
200,000	8,000	8,000,000	57,800
300,000	12,000	9,000,000	65,500
400,000	16,000	10,000,000	67,000
499,000	20,000		
500,000	13,000	15,000,000	78,000
600,000	15,600	20,000,000	88,500
700,000	18,600	25,000,000	100,000
800,000	21,800	30,000,000	110,000
900,000	23,100	35,000,000	114,500
999,999	28,400		
1,000,000	6,400	40,000,000	119,000
1,500,000	12,900	45,000,000	123,500
2,000,000	19,400	50,000,000	128,000
2,500,000	21,800	60,000,000	136,500
3,000,000	24,200	70,000,000	144,500
3,500,000	32,300	80,000,000	152,000
4,000,000	50,400	90,000,000	159,000
4,500,000	58,900	100,000,000	165,000
4,999,000	67,300		
5,000,000	27,300	110,000,000	181,000
6,000,000	37,000	120,000,000	197,000

why drop?

??

any agency sends money to GSA. (through Treasury)
sometimes little at a time in phases, for A/E

per Hutchinson 5-14-75

Table C - 1
Surveys & Tests

<u>Estimated</u> <u>Constr. Cost</u>	<u>Surveys &</u> <u>Tests Expense</u>	<u>Estimated</u> <u>Constr. Cost</u>	<u>Surveys &</u> <u>Tests Expense</u>
\$ 100,000	\$1,700	\$ 7,000,000	\$10,500
200,000	2,200	8,000,000	11,600
300,000	2,600	9,000,000	13,000
400,000	2,900	10,000,000	14,000
500,000	3,100	15,000,000	18,500
600,000	3,200	20,000,000	23,000
700,000	3,400	25,000,000	26,500
800,000	3,600	30,000,000	30,000
900,000	3,800	35,000,000	35,000
1,000,000	4,000	40,000,000	40,000
1,500,000	4,500	45,000,000	45,000
2,000,000	5,000	50,000,000	50,000
2,500,000	5,500	60,000,000	55,000
3,000,000	6,000	70,000,000	60,000
3,500,000	6,500	80,000,000	65,000
4,000,000	7,100	90,000,000	70,000
4,500,000	7,600	100,000,000	75,000
5,000,000	8,200	110,000,000	80,000
6,000,000	9,400	120,000,000	85,000

TABLE C-2

CPM

<u>Estimated Construction Cost</u>	<u>CPM Consultant</u>	<u>Estimated Construction Cost</u>	<u>CPM Consultant</u>
\$ 1,000,000	2,000	\$ 20,000,000	36,000
1,500,000	3,000	25,000,000	42,500
2,000,000	4,000	30,000,000	48,000
2,500,000	5,000	35,000,000	52,500
3,000,000	6,000	40,000,000	56,000
3,500,000	7,000	45,000,000	58,500
4,000,000	8,000	50,000,000	60,000
4,500,000	9,000	60,000,000	65,000
5,000,000	10,000	70,000,000	70,000
6,000,000	12,000	80,000,000	80,000
7,000,000	14,000	90,000,000	90,000
8,000,000	16,000	100,000,000	100,000
9,000,000	18,000	110,000,000	110,000
10,000,000	20,000	120,000,000	120,000
15,000,000	28,000		

TABLE D
REPRODUCTION COSTS

<u>Estimated Construction Cost</u>		<u>Reproduction Cost</u>	<u>Estimated Construction Cost</u>	<u>Reproduction Cost</u>
Under \$	5,000	\$ 100	\$ 4,000,000	\$ 7,000
	10,000	200	5,000,000	8,000
	20,000	300	6,000,000	9,000
	30,000	400	7,000,000	10,000
	40,000	500	8,000,000	11,000
	50,000	600	9,000,000	12,000
	60,000	700	10,000,000	13,000
	70,000	800	15,000,000	15,000
	80,000	900	20,000,000	18,000
	90,000	1,000	25,000,000	21,000
	100,000	1,200	30,000,000	24,000
	200,000	1,600	35,000,000	26,000
	300,000	2,000	40,000,000	28,000
	400,000	2,400	45,000,000	31,000
	500,000	2,700	50,000,000	34,000
	600,000	3,000	60,000,000	38,000
	700,000	3,200	70,000,000	43,000
	800,000	3,300	80,000,000	48,000
	900,000	3,500	90,000,000	53,000
	1,000,000	3,600	100,000,000	58,000
	2,000,000	5,000	110,000,000	63,000
	3,000,000	6,000	120,000,000	68,000

TABLE E

INVITATION & BID EXPENSE

<u>Estimated Construction Cost</u>	<u>Invitation & Bid Expense</u>	<u>Estimated Construction Cost</u>	<u>Invitation & Bid Expense</u>
Under \$40,000	\$ 50	\$ 9,000,000	\$1,200
\$40,000 to \$90,000	100	10,000,000	1,300
\$90,000 to \$200,000	150	15,000,000	1,500
300,000	200	20,000,000	1,800
400,000	250	25,000,000	2,100
500,000	300	30,000,000	2,400
600,000	350	35,000,000	2,600
700,000	400	40,000,000	2,800
800,000	450	45,000,000	3,100
900,000	500	50,000,000	3,400
1,000,000	550	60,000,000	3,800
2,000,000	600	70,000,000	4,300
3,000,000	650	80,000,000	4,800
4,000,000	700	90,000,000	5,300
5,000,000	800	100,000,000	5,800
6,000,000	900	110,000,000	6,300
7,000,000	1,000	120,000,000	6,800
8,000,000	1,100		

TABLE F

TRAVEL EXPENSE

<u>E.C.C.</u>	<u>Design Stage</u>	<u>Construction Stage</u>	<u>E.C.C.</u>	<u>Design Stage</u>	<u>Construction Stage</u>
Under \$40,000	\$ 50	\$ 100	\$ 9,000,000	\$1,200	\$ 2,400
\$40,000 to					
\$90,000 - - -	100	200	10,000,000	1,300	2,600
\$90,000 to					
\$200,000 - - -	150	300	15,000,000	1,500	3,000
300,000	200	400	20,000,000	1,800	3,600
400,000	250	500	25,000,000	2,100	4,200
500,000	300	600	30,000,000	2,400	4,800
600,000	350	700	35,000,000	2,600	5,200
700,000	400	800	40,000,000	2,800	5,600
800,000	450	900	45,000,000	3,100	6,200
900,000	500	1,000	50,000,000	3,400	6,800
1,000,000	550	1,100	60,000,000	3,800	7,600
2,000,000	600	1,200	70,000,000	4,300	8,600
3,000,000	650	1,300	80,000,000	4,800	9,600
4,000,000	700	1,400	90,000,000	5,300	10,600
5,000,000	800	1,600	100,000,000	5,800	11,600
6,000,000	900	1,800	110,000,000	6,300	12,600
7,000,000	1,000	2,000	120,000,000	6,800	13,600
8,000,000	1,100	2,200			

TABLE G 1

GSA MANAGEMENT & INSPECTION COSTS

R & I (141)/REIMBURSEABLE (456)

<u>Estimated Construction Cost</u>	<u>Management & Inspection Cost</u>	<u>Estimated Construction Cost</u>	<u>Management & Inspection Co.</u>
\$ 2,000	\$ 200	\$ 300,000	\$ 11,400
3,000	300	400,000	15,200
4,000	400	499,999	19,000
5,000	450	500,000	17,500
6,000	500	600,000	21,000
7,000	600	700,000	24,500
8,000	700	800,000	28,000
9,000	800	900,000	31,500
9,999	900	1,000,000	35,000
10,000	650	2,000,000	70,000
20,000	1,300	3,000,000	105,000
30,000	1,900	4,000,000	140,000
40,000	2,600	5,000,000	175,000
49,999	3,200	6,000,000	210,000
50,000	2,500	7,000,000	245,000
60,000	2,900	8,000,000	280,000
70,000	3,400	9,000,000	315,000
80,000	3,900	10,000,000	350,000
90,000	4,400	15,000,000	525,000
99,999	4,900	20,000,000	700,000
100,000	3,800	25,000,000	875,000
200,000	7,600	30,000,000	1,050,000

Management & Inspection Costs
Direct Appropriations

<u>Estimated</u> <u>Constr. Cost</u>	<u>Management &</u> <u>Inspection Cost</u>	<u>Estimated</u> <u>Constr. Cost</u>	<u>Management</u> <u>Inspection</u>
\$ 100,000	\$ 23,700	\$ 7,000,000	\$ 322,000
200,000	26,200	8,000,000	360,000
300,000	31,500	9,000,000	396,000
400,000	39,200	10,000,000	430,000
500,000	46,000	15,000,000	585,000
600,000	52,200	20,000,000	700,000
700,000	58,100	25,000,000	800,000
800,000	63,200	30,000,000	870,000
900,000	68,400	35,000,000	910,000
1,000,000	73,000	40,000,000	960,000
1,500,000	100,500	45,000,000	990,000
2,000,000	124,000	50,000,000	1,000,000
2,500,000	145,000	60,000,000	1,200,000
3,000,000	168,000	70,000,000	1,400,000
3,500,000	189,000	80,000,000	1,600,000
4,000,000	208,000	90,000,000	1,800,000
4,500,000	229,500	100,000,000	2,000,000
5,000,000	250,000	110,000,000	2,200,000
6,000,000	288,000	120,000,000	2,400,000

Table G - 3
Management & Inspection Costs
Transfer Accounts

<u>Escalated</u> <u>Contract Award</u> <u>Amount</u>	<u>Management &</u> <u>Inspection Cost</u>	<u>Escalated</u> <u>Contract Award</u> <u>Amount</u>	<u>Management &</u> <u>Inspection Cost</u>
\$ 100,000	\$ 9,800	\$ 7,000,000	\$ 273,000
200,000	19,600	8,000,000	312,000
300,000	29,400	9,000,000	351,000
400,000	39,200	10,000,000	390,000
500,000	42,000	15,000,000	585,000
600,000	50,400	20,000,000	700,000
700,000	58,800	25,000,000	800,000
800,000	67,200	30,000,000	870,000
900,000	79,200	35,000,000	910,000
1,000,000	84,000	40,000,000	960,000
1,500,000	90,000	45,000,000	990,000
2,000,000	120,000	50,000,000	1,000,000
2,500,000	150,000	60,000,000	1,200,000
3,000,000	180,000	70,000,000	1,400,000
3,500,000	210,000	80,000,000	1,600,000
4,000,000	240,000	90,000,000	1,800,000
4,500,000	270,000	100,000,000	2,000,000
4,999,000	300,000		
5,000,000	195,000	110,000,000	2,200,000
6,000,000	234,000	120,000,000	2,400,000

Table H
Material Testing

<u>Estimated</u> <u>Constr. Cost</u>	<u>Material</u> <u>Testing</u> <u>Expense</u>	<u>Estimated</u> <u>Constr. Cost</u>	<u>Material</u> <u>Testing</u> <u>Expense</u>
\$ 100,000	\$ 2,400	\$ 7,000,000	\$ 32,200
200,000	2,600	8,000,000	36,000
300,000	3,100	9,000,000	39,600
400,000	3,900	10,000,000	43,000
500,000	4,600	15,000,000	52,000
600,000	5,200	20,000,000	59,500
700,000	5,800	25,000,000	64,000
800,000	6,300	30,000,000	68,700
900,000	6,800	35,000,000	71,000
1,000,000	7,300	40,000,000	73,900
1,500,000	10,000	45,000,000	75,200
2,000,000	12,400	50,000,000	76,500
2,500,000	14,500	60,000,000	79,000
3,000,000	16,800	70,000,000	81,500
3,500,000	18,900	80,000,000	84,000
4,000,000	20,800	90,000,000	86,500
4,500,000	23,000	100,000,000	89,000
5,000,000	25,000	110,000,000	91,500
6,000,000	28,800	120,000,000	94,000

.PROJECT COST ESTIMATE

CONTRACT NO.

EXPIRATION DATE

PROJECT

PROJECT NO.

FUNDING SOURCE

BUILDING

LOCATION

AREA

GROSS

NET

NET ASSIGNABLE

PROJECT SCOPE

ESTIMATED SITE COST (ESC)

LAND COST

\$

APPRAISAL, LEGAL FEES, ETC.

\$

SURVEY

\$

DEMOLITION, SITE PREPARATION

\$

TOTAL ESTIMATED SITE COST

\$

ESTIMATED DESIGN AND REVIEW COST (EDRC)

ARCHITECT-ENGINEER FEE

\$

TABLE A

GSA REVIEW COST

\$

TABLE A-1 (LESS TABLE A if A-E INVOLVED)

SURVEY AND TESTS

\$

TABLE C-1 (+ TABLE C-2 if CPM INVOLVED)

REPRODUCTION

\$

TABLE D

INVITATION AND BID EXPENSE

\$

TABLE E

TRAVEL

\$

TABLE F (NOT APPL. IF IN D.C.)

TOTAL ESTIMATED DESIGN AND REVIEW COST

\$

ESTIMATED CONSTRUCTION COST (ECC)

CURRENT ESTIMATE CONTRACT AMOUNT

\$

ESCALATION TO (WE USE 1/2% PER MONTH)

\$

ESTIMATED CONTRACT AWARD AMOUNT (

\$

CONTINGENCIES

(+ 7%)

\$

RESERVATIONS

(+ .7 to 1.0%)

\$

TOTAL ESTIMATED CONSTRUCTION COST

\$

ESTIMATED MANAGEMENT AND INSPECTION COST (EMIC)

CONTRACT MANAGEMENT AND INSPECTION COST

\$

TABLE A-1

MATERIAL TESTING

\$

TABLE H

TRAVEL

\$

TABLE F

TOTAL ESTIMATED MANAGEMENT AND INSPECTION COST

\$

ESTIMATED TOTAL PROJECT COST (ETPC)

\$

ESTIMATED BY (Signature)

DATE

APPROVED BY

DATE

DESIGN & SUPERVISION COST TABLE ALTERATIONS & MAJOR REPAIRS

TABLE A-1

SECTION I BASED ON ESTIMATED CONSTRUCTION COST (ECC)

		CONSTRUCTION MANAGEMENT DIVISION (CMD) COST DESIGN*		SUPERVISION	
ESTIMATED CONSTRUCTION COST (ECC) RANGE COL. A	(\$)	BASE FEE (\$)	PLUS % OVER ECC IN COL. A (\$)	BASE FEE (\$)	PLUS % OVER ECC IN COL. A (\$)
UNDER	\$ 2,000	\$ 500	---	\$ 200	---
\$ 2,000 —	9,999	500	18.75	200	7.50
10,000 —	49,999	2,000	14.75	800	5.25
50,000 —	99,999	7,900	5.60	2,900	3.40
100,000 —	499,999	10,700	6.45	4,600	3.23
500,000 &	OVER	36,500	7.30	17,500	3.50

SECTION II BASED ON ESTIMATED TOTAL PROJECT COST (ETPC)

		CONSTRUCTION MANAGEMENT DIVISION (CMD) COST DESIGN*		SUPERVISION	
ESTIMATED TOTAL PROJECT COST (ETPC)** RANGE COL. A	(\$)	BASE FEE (\$)	PLUS % OVER ETPC IN COL. A (\$)	BASE FEE (\$)	PLUS % OVER ETPC IN COL. A (\$)
UNDER	\$ 2,700	\$ 500	---	\$ 200	---
\$ 2,700 —	12,799	500	14.85	200	5.94
12,800 —	60,799	2,000	12.29	800	4.38
60,800 —	115,299	7,900	5.14	2,900	3.12
115,300 —	553,999	10,700	5.88	4,600	2.94
554,000 &	OVER	36,500	6.59	17,500	3.16

*Reduce this amount by A/E fee amount on A/E design projects.
**ETPC does not include Estimated Site Cost (ESC)

- NOTES:
1. Above CMD costs do not include charges for travel, printing, or or duplicating.
 2. Use percents expressed decimally to 4 places in all calculations.
 3. Round CMD cost to nearest hundred dollars in your calculations.

TABLE A

ARCHITECT ENGINEER FEES

<u>Escalated Contract Award Amount</u>	<u>A/E Fee</u>	<u>Escalated Contract Award Amount</u>	<u>A/E F</u>
\$ 100,000	\$ 6,000	\$ 15,000,000	\$ 70
200,000	12,000	20,000,000	91
300,000	18,000	25,000,000	1,11
400,000	24,000	30,000,000	1,33
500,000	30,000	35,000,000	1,54
600,000	36,000	40,000,000	1,74
700,000	41,600	45,000,000	1,94
800,000	47,000	50,000,000	2,14
900,000	52,300	55,000,000	2,35
1,000,000	57,600	60,000,000	2,55
2,000,000	108,600	65,000,000	2,74
3,000,000	157,800	70,000,000	2,94
4,000,000	205,600	75,000,000	3,14
5,000,000	252,700	80,000,000	3,33
6,000,000	299,000	85,000,000	3,53
7,000,000	344,900	90,000,000	3,72
8,000,000	390,200	95,000,000	3,92
9,000,000	435,300	100,000,000	4,11
10,000,000	480,000		

Table C - 1
Surveys & Tests

<u>Estimated</u> <u>Constr. Cost</u>	<u>Surveys &</u> <u>Tests Expense</u>	<u>Estimated</u> <u>Constr. Cost</u>	<u>Surveys</u> <u>Tests Expense</u>
\$ 100,000	\$1,700	\$ 7,000,000	\$10,500
200,000	2,200	8,000,000	11,600
300,000	2,600	9,000,000	13,000
400,000	2,900	10,000,000	14,000
500,000	3,100	15,000,000	18,500
600,000	3,200	20,000,000	23,000
700,000	3,400	25,000,000	26,500
800,000	3,600	30,000,000	30,000
900,000	3,800	35,000,000	35,000
1,000,000	4,000	40,000,000	40,000
1,500,000	4,500	45,000,000	45,000
2,000,000	5,000	50,000,000	50,000
2,500,000	5,500	60,000,000	55,000
3,000,000	6,000	70,000,000	60,000
3,500,000	6,500	80,000,000	65,000
4,000,000	7,100	90,000,000	70,000
4,500,000	7,600	100,000,000	75,000
5,000,000	8,200	110,000,000	80,000
6,000,000	9,400	120,000,000	85,000

TABLE D

REPRODUCTION COSTS

<u>Estimated Construction Cost</u>	<u>Reproduction Cost</u>	<u>Estimated Construction Cost</u>	<u>Reproduction Cost</u>
Under \$ 5,000	\$ 100	\$ 4,000,000	\$ 7,000
10,000	200	5,000,000	8,000
20,000	300	6,000,000	9,000
30,000	400	7,000,000	10,000
40,000	500	8,000,000	11,000
50,000	600	9,000,000	12,000
60,000	700	10,000,000	13,000
70,000	800	15,000,000	15,000
80,000	900	20,000,000	18,000
90,000	1,000	25,000,000	21,000
100,000	1,200	30,000,000	24,000
200,000	1,600	35,000,000	26,000
300,000	2,000	40,000,000	28,000
400,000	2,400	45,000,000	31,000
500,000	2,700	50,000,000	34,000
600,000	3,000	60,000,000	38,000
700,000	3,200	70,000,000	43,000
800,000	3,300	80,000,000	48,000
900,000	3,500	90,000,000	53,000
1,000,000	3,600	100,000,000	58,000
2,000,000	5,000	110,000,000	63,000
3,000,000	6,000	120,000,000	68,000

TABLE E

INVITATION & BID EXPENSE

<u>Estimated Construction Cost</u>	<u>Invitation & Bid Expense</u>	<u>Estimated Construction Cost</u>	<u>Invitation & Bid Expense</u>
Under \$40,000	\$ 50	\$ 9,000,000	\$1,200
\$40,000 to \$90,000	100	10,000,000	1,300
\$90,000 to \$200,000	150	15,000,000	1,500
300,000	200	20,000,000	1,800
400,000	250	25,000,000	2,100
500,000	300	30,000,000	2,400
600,000	350	35,000,000	2,600
700,000	400	40,000,000	2,800
800,000	450	45,000,000	3,100
900,000	500	50,000,000	3,400
1,000,000	550	60,000,000	3,800
2,000,000	600	70,000,000	4,300
3,000,000	650	80,000,000	4,800
4,000,000	700	90,000,000	5,300
5,000,000	800	100,000,000	5,800
6,000,000	900	110,000,000	6,300
7,000,000	1,000	120,000,000	6,800
8,000,000	1,100		

TABLE F

TRAVEL EXPENSE

<u>E. C. C.</u>	<u>Design Stage</u>	<u>Construction Stage</u>	<u>E. C. C.</u>	<u>Design Stage</u>	<u>Cc</u>
Under \$40,000	\$ 50	\$ 100	\$ 9,000,000	\$1,200	\$
\$40,000 to					
\$90,000 - - -	100	200	10,000,000	1,300	
\$90,000 to					
\$200,000 - - -	150	300	15,000,000	1,500	
300,000	200	400	20,000,000	1,800	
400,000	250	500	25,000,000	2,100	
500,000	300	600	30,000,000	2,400	
600,000	350	700	35,000,000	2,600	
700,000	400	800	40,000,000	2,800	
800,000	450	900	45,000,000	3,100	
900,000	500	1,000	50,000,000	3,400	
1,000,000	550	1,100	60,000,000	3,800	
2,000,000	600	1,200	70,000,000	4,300	
3,000,000	650	1,300	80,000,000	4,800	
4,000,000	700	1,400	90,000,000	5,300	1
5,000,000	800	1,600	100,000,000	5,800	1
6,000,000	900	1,800	110,000,000	6,300	1
7,000,000	1,000	2,000	120,000,000	6,800	1
8,000,000	1,100	2,200			

TABLE C-2

CPM

<u>Estimated Construction Cost</u>	<u>CPM Consultant</u>	<u>Estimated Construction Cost</u>	<u>CPM Consultant</u>
\$ 1,000,000	2,000	\$ 20,000,000	36,000
1,500,000	3,000	25,000,000	42,500
2,000,000	4,000	30,000,000	48,000
2,500,000	5,000	35,000,000	52,500
3,000,000	6,000	40,000,000	56,000
3,500,000	7,000	45,000,000	58,500
4,000,000	8,000	50,000,000	60,000
4,500,000	9,000	60,000,000	65,000
5,000,000	10,000	70,000,000	70,000
6,000,000	12,000	80,000,000	80,000
7,000,000	14,000	90,000,000	90,000
8,000,000	16,000	100,000,000	100,000
9,000,000	18,000	110,000,000	110,000
10,000,000	20,000	120,000,000	120,000
15,000,000	28,000		

TABLE II Material Testing

<u>Estimated Constr. Cost</u>	<u>Material Testing Expense</u>	<u>Estimated Constr. Cost</u>	<u>Material Testing Expense</u>
\$ 100,000	\$ 2,400	\$ 7,000,000	\$ 32,200
200,000	2,600	8,000,000	36,000
300,000	3,100	9,000,000	39,600
400,000	3,900	10,000,000	43,000
500,000	4,600	15,000,000	52,000
600,000	5,200	20,000,000	59,500
700,000	5,800	25,000,000	64,000
800,000	6,300	30,000,000	68,700
900,000	6,800	35,000,000	71,000
1,000,000	7,300	40,000,000	73,900
1,500,000	10,000	45,000,000	75,200
2,000,000	12,400	50,000,000	76,500
2,500,000	14,500	60,000,000	79,000
3,000,000	16,800	70,000,000	81,500
3,500,000	18,900	80,000,000	84,000
4,000,000	20,800	90,000,000	86,500
4,500,000	23,000	100,000,000	89,000
5,000,000	25,000	110,000,000	91,500
6,000,000	28,800	120,000,000	94,000

UNITED STATES GOVERNMENT

Memorandum

DATE: June 15, 1972

TO : Edward J. Widmayer
Acting Director, Office of Budget & Finance

FROM : Mary Brooks
Director of the Mint *MB*

SUBJECT: Budget information from and Allocations to GSA for the
Fiscal Years 1973 and 1974.

This is to inform you that the data shown on GSA Forms 966 and 967 are satisfactory for the uses of the Bureau of the Mint.

As to additional funds to be allocated to the General Services Administration, these amounts are estimated by fiscal years as follows:

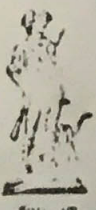
F. Y. 1973: \$ 2,000,000

GSA is expected to negotiate a contract with an Architect-Engineer firm early in F. Y. 1973 to provide for facility design of the new Denver Mint covering the following sub-activities: Review and validation of the facility criteria prepared by the Bureau of the Mint; industrial process design and layout for bid documents for the procurement of long lead time production equipment; and initiation of site development and building(s) design.

F. Y. 1974: \$ 3,250,000

" GSA will continue to be responsible for the Architect-Engineer services under the contract negotiated in F. Y. 1973 covering the following activities: Completion of site development and building plans and specifications for the installation and connection of all production process equipment; and advisory and technical assistance to the Bureau of the Mint on the procurement actions related to long lead time production equipment. (Estimated amount -- \$2,250,000).

GSA also will be expected to negotiate a contract with a Construction Management firm for the following services: Detailed review of designs and bid documents prepared by the Architect-Engineer primarily related to cost control, construction feasibility and value engineering; factory inspection of production equipment items to be procured by the Bureau



of the Mint; review and recommendations to the Government Contracting Officer pertaining to shop drawings, materials submittals and testing requirements of the construction contractor; and inspection of the construction and equipment installation work of the construction contractor. (Estimated amount -- \$1,000,000).

The above allocations of funds are, of course, contingent upon the Congressional allowance of our appropriation requests for these two fiscal years.

Vaughan

FUNDING OBLIGATION - BY FISCAL YEAR

PLANNING SCHEDULE - NEW DENVER MINT

Dollars
in
Millions

Cost Element	(FY 1971)	(FY 1973)	4	5	6	7	8	(FY 1979)
SITE								
Acquisition		1.50						1.50
Development Work			0.80	2.00				0.80
ARCHITECT-ENGINEER								
Criteria Development	0.06	0.06		0.30				0.25
Site Development Dwgs.	0.30	0.25						0.20
Facility Bldg. Design	0.12	0.20						0.90
Final Facility Design	1.44	0.90	0.20					0.20
Equipment Specs. and Survey		0.08						
Equipment Potential	0.08	0.65						0.65
Equipment Procurement, Bid								
Review, Shop Dwgs.,			1.70					
Installation Dwgs.			1.25					1.25
BUILDING (s)								
Construction Cost				21.00				21.60
EQUIPMENT								
Equipment Cost			12.90		9.00			18.00
Equipment Installation Cost			14.25	3.50	15.00	1.00		5.00
CONSTRUCTION MANAGEMENT								
Construction Supervision			0.40	1.40				1.00
Equipment Inst. Supervision			1.00		0.60			0.60
START-UP AND RUN-IN						0.60	0.70	0.60
RELOCATION AND TRANSITION							0.30	0.28
FUNDING REQUIREMENTS	1.50	3.50	15.00	24.40	19.60	1.00	1.00	52.83
		2.00	17.50	25.10	5.85	0.60	0.28	

15.00

15.60

1.50 1.50
0.80 2.00
0.25 0.06
0.20 0.30
0.90 0.12
0.20 1.44
0.65 6.08
1.25 1.70
21.60 21.00
18.00 22.90
5.00 26.90
6.00
1.00 1.80
0.60 6.60
0.60 0.70
0.28 0.30
52.83 64.50
60.50

SUMMARY JUSTIFICATION OF F. Y. 1973 BUDGET ESTIMATES

Based upon extensive studies of estimated coin requirements in relation to Mint manufacturing capabilities, it has been determined that a new Mint must be fully operational by 1980 in order to meet the public need for coins. An appropriation of \$1.5 million was approved for the fiscal year 1972, for the acquisition of a site for a new Mint in Denver, and the Treasury Department is currently working with the General Services Administration to obtain the required land. It is anticipated that action will be taken on this phase during the fiscal year 1972.

It is estimated that the total cost of a new facility at Denver, including site acquisition, architect and engineering services, building construction, and equipment purchase and installation, will be approximately \$50 million. Required amounts will be requested in appropriations as the need arises to finance the various phases of the project. An appropriation of \$2.00 million is requested for the fiscal year 1973, to enable the Mint to enter into contracts for architect and engineering services which are necessary to permit the construction and equipping of the facility in a timely manner. Plans call for completion of in-house preliminary work on the new Mint during fiscal year 1972, and it is anticipated that negotiations will be undertaken with an architect and engineering firm early in the fiscal year 1973. In fiscal year 1974 the amount to be requested is \$17,500,000 which will include the cost of the final facility design, equipment procurement, bid review, shop and installation drawings, site development work, the cost of equipment and construction supervision. Funds for the building construction are scheduled to be requested in fiscal year 1975.

GENERAL INFORMATION

Legislation authorizing the construction and equipping of buildings, and the acquisition of suitable sites required in connection with the operations of the Bureau of the Mint is contained in 31 U. S. C. 291-294. Legislation increasing the authorized limit and extending the date during which appropriations may be enacted is being requested.

Funds in the amount of \$21,000 were used during fiscal year 1966 for an engineering study of expansion of the Denver Mint. The balance of funds (\$79,000) remaining for the Denver study has been in reserve until further decisions are made.

To provide the coin production facilities which will be required to meet the public need for coins by 1980, it is essential that prompt action be taken to initiate the Architect-Engineer phases as soon as site acquisition has been completed.

Current studies, including a recent Treasury Department study, indicate the total demand for coins by 1980 is estimated to reach 12 billion coins per year. In view of the time required from the authorization and planning stage to actual operation of a new facility, the new Mint project should be implemented promptly with the acquisition of a site and in-house development of planning criteria. Considering the indicated demand by the anticipated time of completion of this facility, it should have the capacity to produce at least 6 billion coins per year on a two-shift basis. The new Philadelphia Mint with 4 billion coins and the new Mint to be constructed with a capacity of 6 billion coins, together with existing capacity at San Francisco, could thus provide for the needs of the Country by 1980 on a two-shift basis.

In May of 1969 a Treasury Department study was completed concluding that a new Mint facility would be required to be in operation by 1980 to meet projected coinage requirements. Other studies corroborate that finding.

Treasury has also concluded that the new facility should be located in Denver and that it should be undertaken without delay to achieve the objective of a new facility to be in operation by 1980.

A planning schedule which has been made a part of the General

Information statement, based on the latest information developed on plans for a new Denver Mint, projects preliminary funding requirements by fiscal year through the entire scope of the project.

Funds amounting to \$1,500,000 were appropriated for Fiscal Year 1972 to cover the cost of site acquisition. During this period in-house planning criteria will continue to be developed. The appropriation requested for fiscal year 1973 of \$2,000,000 covers most of the architect-engineering costs.

In arriving at estimates of cost of the elements included in the planning schedule, several important factors were considered.

1. Facility cost vs. production capacity of 4 billion coins per year for the recently-completed Philadelphia Mint compared to projected facility cost for the new Denver Mint at a production capacity of 6 billion coins per year.

2. Anticipated construction of several buildings rather than one single building at the new Denver Facility.

3. Escalation of Architect-Engineer costs and building and equipment costs due to expected continuing increase in wages and cost of materials.

Escalation of costs in the past and projected for the future is demonstrated by the following G.S.A. construction cost indices and projected percent increase in the future. (Years 1926 through 1929 = Index of 100)

	1965	1966	1967	1968	1969	1970
Denver	343.9	356.4	364.7	394.0	420.9	455.6

Additionally, G. S. A. expects construction costs (for planning purposes) to escalate generally.

1971	1972	1973	1974
10%	10%	8%	6%

17 Aug 1972

New Denver Mint
FY 74 Budget

Normal Schedule/Funding

Architect-Engineer Services (Includes GSA cost)	<u>\$ Million</u>
Installation Drawings	1.1
Advisory Assistance	0.1
Construction Management	1.0
Equipment	<u>15.3</u>
TOTAL	17.5

Reduced Schedule/Funding

A-E Services	1.2
Construction Management	1.0
Equipment	<u>12.2</u>
(Sleb Mill - 4.4	
Scarfing Mill - 1.7	
Inter Mill - 2.3	
Finish Mill - 2.0	
Slitting Mill - 0.7	
	<u>11.1</u>
Contingencies	1.1
	<u>12.2</u>
TOTAL	14.4

(Proposed
FY 74 Budget
\$14.25 million)

ESTIMATED COST
LONG LEAD TIME EQUIPMENT ITEMS

<u>ITEM</u>	<u>ESTIMATED COST (July 1972)</u>
	\$
Melting & Holding Furnaces	1,100,000
Casting Units (Including cast down) (scw, scales & conveyor)	350,000
Re-Heat Furnace	1,700,000
Hot Roll Mill	4,400,000
Scarfing Mill	1,700,000
Intermediate Mill	2,300,000
" Finishing Mill	2,000,000
Slitting Mill	700,000
	TOTAL 12,550,000
	14,250,000
Miscellaneous & Contingencies for	1,430,000
Price Increases (10%)	1,255,000
	13,805,000
	15,680,000
<u>Other Items</u>	
Bell Connectors	6K200 - Coining Presses
Roll Grinders	Blank Annealing & Cleaning Equip.
Scrap Baler	Upset Mills
Metal Shear System	Count & Bay Machines
Scales on Make-up Area	Analytical Equipment
- Blanking Presses	Automated Materials Handling
	Bag Manufacturing Equipment
	Plant Core Building Equipment

BLES
100T
\$64,100 ea.
June '72

MAJOR PROCESS EQUIPMENT COST DATA

ITEM	CAPACITY	MANUFACTURERS	MINT A. O.	ESTIMATED COST (1972)	SOURCE
MELTING AND HOLDING FURNACES	13.755 Tons 14 Tons /Hour (6-800 KW Melters and 2-800 KW Holders) 3 Shifts	AJAX MAGNETHERMIC INDUCTOTHERM BROWN AND BAVARI	DARLINGTON	\$1,100,000	AJAX Delivery Time 6-8 Months
CASTING UNITS (TWO)	13.48 Tons/Hour 5" x 32" x 23' INGOTS 2 UNITS AT 2 INGOTS ^{MOLDS} EACH. INCLUDES CANK DOWN LAYER 3 Shifts	ASCAST LOMA MESTA	DARLINGTON	\$319,600 plus transportation Note: Delivery time - 36 weeks \$350,000 230,000	ASCAST MESTA (Casting units only) LOMA (Includes, easy down, cropping, saw, conveyor & scale)
PRE HEAT FURNACE	37.2 Tons/Hour (One Shift)	AJAX	DARLINGTON	\$1,700,000	AJAX Delivery time 8-12 Months

PAGE 2 OF - PAGES

ITEM	CAPACITY	MANUFACTURERS	MINT A.O.	ESTIMATED COST (1972)	SOURCE
SLAB BREAKDOWN MILL W/CONVEYOR, SPRAY CHAMBER, CROPPER, UPCOILER, & COOLANT FILTER SYSTEM (TWO-HIGH)	37.2 TONS/HOUR 1 shift	MESTA BLISS PITTSBURGH NASH WATERBURY-FERRAL	DARLINGTON	\$1 3,720,000 \$1 3,900,000 \$1 4,446,000 (Includes spares, etc (20 months delivery))	MESTA 34" x 42" TWO HIGH 5000 HP MAIN DRIVE (16-18 months delivery) BLISS 34" x 38" TWO HIGH 2000 HP (20 months delivery)
SCARFING MILL	36.52 TONS/HOUR 1 shift	MESTA TORRINGTON MCKAY	DARLINGTON	\$1 1,672,000 1,721,000	MESTA BLISS
INTERMEDIATE STRIP MILL (FOUR HIGH)	32.14 TONS/HOUR 21.42 TONS/HOUR	MESTA BLISS PITTSBURGH NASH WATERBURY-FERRAL	LORD	\$1 2,305,000 1,721,000 \$1 1,967,000	MESTA 16" x 42" FOUR 39" x 42" 141617 BLISS 16" x 38" FOUR 34" x 38" 141617

PAGE 3 OF 4 PAGES

<u>ITEM</u>	<u>CAPACITY</u>	<u>MANUFACTURERS</u>	<u>MAINT A.O.</u>	<u>ESTIMATED COST</u>	<u>SOURCE</u>
STRIP FINISH MILL (FOUR-HIGH)	21.42 TONS/HOUR	MESTA BLISS PITTSBURGH IVASH WATERBURY-FERRAL	LORD	\$ 2,010,000 \$ 1,965,000 \$ 2,237,000	MESTA 12" x 42" } 4-HIGH 39" x 42" } 16-18 months delivery BLISS 10" x 38" } FOUR 34" x 38" } HIGH
SLITTING MILL	21.42 TONS/HOUR	, ,	LORD	\$ 688,000 465,000 526,000	MESTA BLISS.

17 Aug 1972

New Denver Mint
FY 74 Budget

Normal Schedule/Funding

Architect-Engineer Services (Includes GSA cost)	<u>\$ Million</u>
Installation Drawings	1.1
Advisory Assistance	0.1
Construction Management	1.0
Equipment	<u>15.3</u>
TOTAL	17.5

Reduced Schedule/Funding

A-E Service	1.2
Construction Management	1.0
Equipment	<u>12.2</u>
(S/cb Mill - 4.4	
Scarfing Mill - 1.7	
Inter Mill - 2.3	
Finish Mill - 2.0	
Shipping Mill - 0.7	
	<u>11.1</u>
Contingencies	1.1
	<u>12.2</u>
TOTAL	14.4

(Proposed
FY 74 Budget
\$14.25 million)

ESTIMATED COST
LONG LEAD TIME EQUIPMENT ITEMS

<u>ITEM</u>	<u>ESTIMATED COST (July 1972)</u>
	\$
Melting & Holding Furnaces	1,100,000
Casting Units (Including cast down, saw, scales & conveyor)	350,000
Re-Heat Furnace	1,700,000
Hot Roll Mill	4,400,000
Scarfing Mill	1,700,000
Intermediate Mill	2,300,000
Finishing Mill	2,000,000
Slitting Mill	700,000

TOTAL	12,550,000
	14,250,000
Miscellaneous & Contingencies for Price Increases (10%)	1,430,000
	1,255,000
	13,805,000
	15,680,000

Other Items

Bell Connectors
Roll Grinders
Scrap Baler
Metal Shear System
Scales on Take-up Area

6K200 - Coining Presses
Blank Annealing & Cleaning Equip
Upset Mills
Count & Bay Machines
Analytical Equipment
Automated Materials Handling
Bag Manufacturing Equipment
Plant Core Building Equipment

- ~~Blanking Presses~~

Bliss
100T
64,000 ea.
June 72

MAJOR PROCESS EQUIPMENT COST DATA

ITEM	CAPACITY	MANUFACTURERS	MINT A. O.	ESTIMATED COST (1972)	SOURCE
MELTING AND HOLDING FURNACES	13.755 Tons 14 Tons /Hour (6-800 KW Melters and 2-800 KW Holders) 3 Shifts	AJAX MAGNETHERMIC INDUCTOTHERM BROWN AND BAVARI	DARLINGTON	\$1,100,000	AJAX Delivery Time 6-8 Months
CASTING UNITS (Two)	13.48 Tons/Hour 5" x 32" x 23" Ingots 2 UNITS AT 2 INGOTS ^{MOLDS} EACH. INCLUDES CHILL DOWNLAYER 3 Shifts	ASCAST LOMA MESTA	DARLINGTON	\$319,600 plus transportation Note: Delivery time - 36 weeks \$350,000 230,000	ASCAST MESTA (casting units only) LOMA (includes chills down, cropping, saw, conveyor & scale)
PRE HEAT FURNACE	37.2 Tons/Hour (One Shift)	AJAX	DARLINGTON	\$1,700,000	AJAX Delivery time 8-12 Months

PAGE 2 of - PAGES

ITEM	CAPACITY	MANUFACTURERS	MINT A.O.	ESTIMATED COST (1972)	SOURCE
SLAB BREAKDOWN MILL W/CONVEYOR, SPRAY CHAMBER, CROPPER, UPCOILER, COOLANT FILTER SYSTEM (Two-High)	37.2 Tons/Hour 1 Shift	MESTA BLISS PITTSBURGH NASH WATERBURY-FERRAL	DARLINGTON	\$ 3,720,000 \$ 3,900,000 \$ 4,446,000 (Includes spares, etc (20 Months Delivery))	MESTA 34" x 42" Two-High 5,000 HP MAIN DRIVE (16-18 months delivery) BLISS 34" x 38" Two-High 2,000 HP (20 Months Delivery)

SCARPING MILL	36.52 Tons/Hour 1 Shift	MESTA TOORINGTON MCKAY	DARLINGTON	\$ 1,672,000 1,721,000	MESTA BLISS
------------------	----------------------------	------------------------------	------------	--	-------------------------------

INTERMEDIATE STRIP MILL (FOUR HIGH)	32.44 Tons/Hour 21.42 Tons/Hour	MESTA BLISS PITTSBURGH NASH WATERBURY-FERRAL	LORD	\$ 2,305,000 1,721,000 \$ 1,967,000	MESTA 16" x 42" Four 39" x 42" 1+16H BLISS 16" x 35" Four 34" x 35" 1+16H 20 Months Delivery
---	---	--	------	--	--

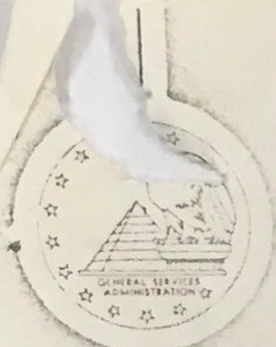
<u>ITEM</u>	<u>CAPACITY</u>	<u>MANUFACTURERS</u>	<u>MAINT A. O.</u>	<u>ESTIMATED COST</u>	<u>SOURCE</u>
STRIP FINISH MILL (FOUR-HIGH)	21.42 TONS/HOUR	MESTA BLISS PITTSBURGH IVASH WATERBURY-FERRAL	LORD	\$ 2,010,000 - 1,465,000 \$ 2,237,000	MESTA 12" x 42") FOUR-HIGH 39" x 42") 16-18 months delivery BLISS 10" x 38") FOUR 34" x 38") HIGH 20 Months Delivery
SLITTING MILL	21.42 TONS/HOUR	, ,	LORD	\$ 688,000 - 465,000 526,000	MESTA BLISS.

FUNDING OBLIGATION - BY FISCAL YEAR

PLANNING SCHEDULE - NEW DENVER MINT

COST ELEMENT	1973	1974	1975	1976	1977	1978	FY 1979	DOLLARS IN MILLIONS
SITE								
Acquisition	1.50							1.50
Development Work			2.00					2.00
ARCHITECT-ENGINEER								
Criteria Development	0.06							0.06
Production Process Design	0.30							0.30
Site Development Dwgs.	0.12							0.12
Facility Bldg. Design	1.44							1.44
Equipment Specs. & Survey								
Equipment Potential	0.08							0.08
Equipment Procurement, Bid Review, Installation Dwgs.			1.70					1.70
BUILDING (s)								
Construction Cost				21.00				21.00
EQUIPMENT								
Equipment Cost			15.68		2.32			18.00
Equipment Installation Cost				5.00				5.00
CONSTRUCTION MANAGEMENT								
Construction Supervision			1.40					1.40
Equipment Inst. Supervision					0.60			0.60
START-UP AND RUN-IN						0.60		0.60
RELOCATION AND TRANSITION							0.28	0.28
FUNDING REQUIREMENTS	3.50	--	20.78	26.00	2.92	0.60	0.28	54.08

Frank Rhea



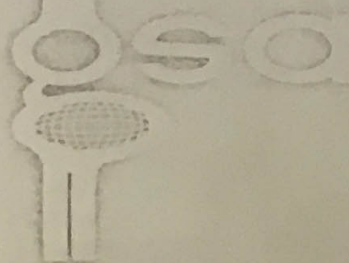
REPORT ON

PREAWARD EVALUATION OF PRICING PROPOSAL

DMJM-PHILLIPS•REISTER

PROJECT NO. N-CO-72-600

SEPTEMBER 19, 1974



OFFICE OF AUDITS
GENERAL SERVICES ADMINISTRATION
UNITED STATES OF AMERICA

TABLE OF CONTENTS

	<u>Page</u>
EXECUTIVE BRIEF	1
INTRODUCTION	2
BACKGROUND	3
RESULTS OF AUDIT	5
Audit Assistance by Defense Contract Audit Agency (DCAA)	5
Other Direct Costs	6
Consultant Costs	7
Cost Escalation	9
Cost Accounting Standards (CAS)	10
A-E REACTION	10
APPENDIXES	
I Defense Contract Audit Agency Report on Evaluation of Labor and Overhead Rates and Other Factors	12
II Statement of Contractor's Proposal and Results of Audit Review	16
III Statement of Proposed Hours and Results of GSA Technical Evaluation (Design Services)	19
IV Statement of Proposed Other Direct Costs and Results of Technical Evaluation (Prime Contractor Effort)	24
V Statement of Proposed Value Management Costs and Results of GSA Technical Evaluation	25
VI Statement of Proposed Mechanical/Electrical Costs and Related Technical and Audit Adjustments - Swanson-Rink & Associates, Inc. (Design Services)	26

APPENDIXES (continued)

Page

VI(a)	Statement of Overhead Rate Submitted by Subcontractor and GSA Auditor's Related Adjustments - Swanson-Rink & Associates, Inc. (Mechanical/Electrical)	28
VII	Statement of Proposed Landscape Subcontract Costs and Results of Technical Evaluation (Chris G. Moritz, Inc.)	30
VIII	Statement of Proposed Accoustical Subcontract Costs and Results of Technical Evaluation (Bolt Beranek and Newman, Inc.)	31
IX	Statement of Proposed Firesafety Consultant Costs and Related Technical and Audit Adjustments (Design Services)	33
X	Statement of Proposed Costs for Construction Supervision Services and Results of Technical Evaluation (Prime Contractor Effort)	35
XI	Statement of Proposed Firesafety Consultant Costs and Results of Technical and Audit Adjustments (Construction Supervision Services)	
XII	Construction Management Division Technical Evaluation of A-E Design Proposal	38

EXECUTIVE BRIEF

Audit Objectives

Review of the \$2,307,187 price proposal was performed pursuant to a request by the PBS Construction Management Division in Region 8. The proposal submitted by DMJM-Phillips-Reister, Denver, Colorado was for design and construction supervision services relative to a new U.S. Mint Building in Denver. The purpose of the audit was to evaluate the proposed contract price.

Summary Results

Proposed Price		\$2,307,187
Less: Technical Adjustments	\$517,714	
Audit Adjustments	<u>49,952</u>	<u>567,666</u>
As Adjusted		<u>\$1,739,521</u>

Technical adjustments were primarily the dollar effect of reducing proposed direct labor hours as determined by the PBS technical evaluation.

The major audit adjustments involve adjustments to subcontractors' proposed costs to remove excess overhead cost included and cost escalation not excluded by the prime contractor. The proposal had been submitted on a non-escalated basis with future escalation or de-escalation contingent upon changes in the National Cost of Living Index.

Contractor Response

Because this is a preaward proposal, the audit results were only discussed in general terms. Specifics of adjustments were not disclosed. The subcontractor Swanson-Rink did not concur with the auditor's exclusion of certain overhead costs in our overhead rate determination.

William R. Thomas

WILLIAM R. THOMAS

Director

Field Audit Office, Denver

REPORT ON
PREAWARD EVALUATION OF PRICING PROPOSAL
DMJM-PHILLIPS-REISTER
PROJECT NO. N-CO-72-600

INTRODUCTION

Pursuant to the request dated July 31, 1974 by the GSA Project Director, Construction Management Division, PBS, we have made a preaward audit evaluation of the price proposal submitted by DMJM-Phillips-Reister for design and construction supervision services relative to the new U.S. Mint Building to be built in Denver, Colorado. This report provides the results of audit pertaining to the prospective contractor's revised proposal dated September 3, 1974 and submitted in the amount of \$2,307,187.

Our examination was conducted in accordance with generally accepted auditing standards. Consideration was accorded to guidelines set forth in Federal Procurement Regulations (FPR), Part 1-15, and applicable Cost Accounting Standards (CAS) published by the Cost Accounting Standards Board. We performed audit procedures and conducted tests of accounting records and other data as considered appropriate to the circumstances.

A technical evaluation was requested and received from the PBS Construction Management Division. It is attached as Appendix XII and the dollar effects of the technical evaluation have been included in this report where applicable. The original technical evaluation received was dated August 23, 1974. It was partially revised on September 12, 1974 and again on September 17, 1974. Our application of the results includes the effect of both revisions. The dollar effect of quantitative adjustments

to direct labor was calculated and are shown on appendixes as columnar heading entitled "Technical Adjustments". Also, any quantitative adjustments to other direct costs, such as models, travel, reproduction, and long distance telephone were similarly shown under this same columnar heading.

The Office of Audits has no objection to the release of this report, at the discretion of the Contracting Officer, to the duly authorized representatives of DMJM-Phillips-Reister.

BACKGROUND

The proposal consisted of the following items:

Design Services

Direct Labor, Fringe Benefits, Overhead, and Profit	\$1,521,776
Other Direct Costs	154,828
Consultants Costs	463,218
Prime Contractor Markup on Consultants	<u>10,593</u>
Total Design Costs	\$2,150,415

Construction Supervision Services

Prime Contractor	\$ 129,772
Consultants	<u>27,000</u>
Total Construction Supervision Services	\$ 156,772
Total Proposed Price	<u><u>\$2,307,187</u></u>

Although the proposed contract scope would involve the contractor from about September 1974 through post construction services, until mid-1978, it should be noted that the proposal was submitted on the basis of current salaries without any estimated cost escalation. Instead, DMJM-Phillips-Reister has proposed a fixed price contract with escalation or

de-escalation in accordance with the Department of Labor, National Cost of Living Index. The proposal stated that the July 1, 1974 audited labor rates and the August 1974 audited labor rates for Swanson-Rink and Associates, the mechanical/electrical subcontractor, would be the base rate for escalation.

The prospective contractor's original proposal, dated October 23, 1973, was submitted in the amount of \$2,757,924 and was evaluated by earlier audit reports 11-4050-PC8-D and 11-4050-PC8-D(a), both dated March 5, 1974. Because of problems encountered by GSA and the city of Denver in obtaining a suitable construction site, the original proposal was not negotiated or accepted.

A revised proposal was requested by GSA representatives and the revised proposal received was dated July 31, 1974. This was submitted in the amount of \$2,934,938. Subsequent to a meeting on August 19, 1974 with GSA representatives, the subject revised proposal, dated September 3, 1974, was submitted to GSA in the amount of \$2,307,187, incorporating a revised project schedule, professional service scope changes, and other decisions reached at the meeting.

It was submitted by DMJM-Phillips-Reister, the Denver division of Daniel, Mann, Johnson & Mendenhall of Los Angeles, California. Subcontractor consultants were identified and costs were included in the proposal for the following:

Mechanical and Electrical - Building and Site

Swanson-Rink and Associates, Inc.
Denver, Colorado

Landscape Architect

Chris G. Moritz, Inc.
Denver, Colorado

Accoustical Consultant

Bolt Beranek and Newman, Inc.
Canoga Park, California

Firesafety Consultant

Rolf Jensen and Associates, Inc.
Deerfield, Illinois

RESULTS OF AUDIT

The results of our audit are summarized below and further detailed in Appendixes II through XI.

Proposed Price	<u>\$2,307,187</u>
Technical Adjustments	<u>\$ 517,714</u>
Audit Adjustments	<u>\$ 49,952</u>
As Adjusted	<u>\$1,739,521</u>

Comments regarding the more significant aspects of our audit, adjustments, and the proposal follow.

Audit Assistance by Defense Contract Audit Agency (DCAA)

Estimating factors used for the DMJM effort included in the proposal were provided by the firm's Los Angeles headquarters. Accordingly, we requested that an assist audit be performed by the DCAA Los Angeles Branch Office. The audit report received is incorporated herein as Appendix I and it should be noted that no exceptions were taken to the proposed direct labor rates and indirect expense rates. The proposed profit rate of

10 percent is a matter for negotiation by the GSA Contracting Officer and was not commented on.

The DCAA report stated that requested data pertaining to historical cost data of providing operational and maintenance manuals were not available for projects of similar scope. It also commented on the mix between Los Angeles and Denver employees included in the proposed labor rates, stating that all personnel who are qualified to work on this project were included in the direct labor rate calculations.

Finally, it should be noted that, although the audit evaluation was directed towards the earlier proposal, dated July 31, 1974, DMJM's estimating factors were not changed during preparation of the current proposal, dated September 3, 1974. Proposed labor hours were revised and the application of an escalation was eliminated. These actions had no effect on the DCAA evaluation. However, we noted that an escalation factor of 6 percent included in the July 31, 1974 proposal was concluded by DCAA to be reasonable.

Other Direct Costs

Significant amounts were included in the proposal for DMJM effort for the following categories:

Model	\$ 29,389
Travel	32,559
Reproduction	16,900
Long Distance Telephone	4,400
Value Management	<u>71,580</u>
	<u>\$154,828</u>

Our inquiries determined that costs for the first four categories were

essentially judgmental estimates and that proposal of such costs as direct costs, where identifiable to particular contracts, was consistent with the contractor's recording of actual costs and would, therefore, not be a duplication of similar, but unidentifiable costs recorded as indirect costs. No audit adjustments were made. However, the PBS quantitative technical evaluation concluded that \$22,252 were questionable and adjustments for that amount are shown on Appendix II.

Value management costs were calculated by estimating required hours extended by the proposed hourly rates including fringe benefits, overhead, and profit. Since the hourly rates were accepted as reasonable by the DCAA audit, no audit adjustments were made. The quantitative technical evaluation concluded that \$24,432 was questionable and this adjustment is also shown on Appendix II.

Consultant Costs

Swanson-Rink & Associates, Inc. The \$345,168 estimated costs for this consultant submitted to and included in DMJM's proposal were evaluated by the GSA Denver Audit Office. In this instance, because of estimated costs exceeding \$100,000 to be negotiated, the FPR 1-3.8 requirements for certified cost and pricing data and preaward audit evaluation apply. Our audit results are included as Appendixes VI and VI(a). Essentially, we concluded that proposed labor rates were reasonable and acceptable but our adjustments to the subcontractor's overhead rate calculation resulted in a decrease adjustment to Swanson-Rink's proposal of about \$42,000. Other audit adjustments were minor. Technical adjustments to proposed hours resulted in costs questioned of about \$11,000. Both audit and technical adjustments are shown on Appendix II.

Chris G. Moritz, Inc. We concluded that the consultant's proposed costs of \$12,117 for landscaping design did not warrant preaward audit evaluation at the subcontractor's premises and none was performed. The combined technical and audit adjustments in the amount of \$462 were minor.

Bolt Beranek and Newman, Inc. Our inquiries disclosed that estimating factors, used to price the subcontractor's proposal for accoustical design effort of \$79,834, were provided by the firm's headquarters in Cambridge, Massachusetts. Further inquiries to the DCAA Northeast Branch Office disclosed that previous audit work had been performed by that office and that estimating factors proposed for the Denver Mint project were the same as were recently submitted to DCAA for pricing other contract work. Although the currently submitted factors had not yet been audited by DCAA, based on past audit experience, no significant adjustments were anticipated.

Our audit adjustment of \$2,669 shown on Appendix II pertains to inclusion of cost escalation contained in the proposal that DMJM representatives had not eliminated in preparing their overall proposal. The technical evaluation resulted in \$20,175 costs questioned and is also shown on Appendix II.

Rolf Jensen and Associates, Inc. An inquiry to the GSA Chicago Audit Office disclosed that recent audit work had been performed pursuant to firesafety design services proposed for other GSA contract work. We found that the Chicago audit had evaluated the same estimating factors as those proposed for this contract. The auditor's conclusions were that proposed labor rates were acceptable but that an overhead rate of 98.35 percent and

a G&A rate of 17.39 percent were more representative of experience than the 149.32 percent and 14.78 percent, respectively, that had been proposed. The subcontractor's proposal was adjusted accordingly on Appendix II. Combined, the technical and audit adjustments were minor, resulting in an increase to the proposal of \$2,378.

Cost Escalation

Cost escalation as estimated for future periods that had been included in the July 31, 1974 proposal was excluded for the most part from the revised proposal dated September 3, 1974. This amounted to a reduction of over \$200,000 in the proposal for this element of cost. Our review indicated that some of the subcontractor proposals incorporated by DMJM still retained some cost escalation and this was further eliminated where identifiable. Therefore, the proposed amounts shown "As Adjusted" on Appendix II is presented on a non-escalated basis.

The prospective contractor's proposal to escalate cost during the life of the contract based on the National Cost of Living Index requires careful consideration by the Contracting Officer. Our inquiries to the Bureau of Labor Statistics, Department of Labor in Kansas City disclosed that the national index measures changes in prices of goods and services on a month by month basis. It includes the effect of urban wage earners and clerical employees such as craftsmen, foremen, clerical, and sales but does not include professional level employees such as architects and engineers. We were informed that it is planned to revise the formula to include professional employees but this will not take place until 1977. Therefore, the propriety for such a contracting arrangement for the subject

contract appears questionable. Also, the proposal was not specific as to when and how the index changes would be applied to subsequent contract periods.

It is our opinion that any such contract agreement would greatly increase administrative requirements for the Government, including verification of increased or decreased amounts applicable to the contract. It would also significantly reduce the element of risk assumed by the contractor and, in our opinion, this should be a consideration in determining an allowable profit rate for the contract performance.

Cost Accounting Standards (CAS)

The CAS published by the Cost Accounting Standards Board in Washington, D.C. are designed to achieve uniformity and consistency in the cost accounting practices followed by Government contractors and further consistency in submitting price proposals in accordance with those cost accounting practices. The implementation of CAS prescribed by FPR Temporary Regulation 27 are applicable to this prospective contract. Our review did not disclose any inconsistency with the requirements of the applicable CAS.

A-E REACTION

At the conclusion of our review, the audit results were separately discussed in general terms with representatives of DMJM-Phillips-Reister and Swanson-Rink. The general format, purpose, and distribution of our report was described and the nature of audit adjustments explained. Specific dollar amounts were not discussed.

Swanson-Rink representatives did not entirely agree with certain costs excluded from their overhead rate determination. In particular, they disagreed with our exclusion of Incentive Compensation of \$72,000 and Management Consultant and Legal Fees of \$11,688 as unallowable cost in the rate determination. In explanation we cited FPR 1-15.205-23 which excludes such costs and also cited the company's reorganization subsequent to the expenditures.

DMJM representatives made inquiries about the extent of and conclusions reached pertaining to our review of subcontractors' costs. Our review procedures were described and they were advised that the only significant adjustment was made to the Swanson-Rink proposal because of the exception taken to the overhead rate proposed.

The dollar amount of technical evaluation adjustments were not provided the DMJM representatives but we did state that the amount was significant and the dollar effect would be included in our report.

APPENDIXES



DEFENSE CONTRACT AUDIT AGENCY

LOS ANGELES REGION

Los Angeles Branch Office

11099 South La Cienega Boulevard - Room 314 Annex

Los Angeles, California 90045

APPENDIX I
Page 1 of 4

IN REPLY REFER TO

4101/5A210047

August 22, 1974

SUBJECT: Audit Report on Evaluation of
Labor and Overhead Rates and Other Factors
Project No. N-CO-72-600
DMJM-Phillips Reister, A Division of
Daniel, Mann, Johnson & Mendenhall
Los Angeles, California
Audit Report No. 4101-06-5-0196

TO: Director, Field Audit Office, Denver (ADA-8)
Office of Audits
General Services Administration
Bldg. 41, Denver Federal Center
Denver, Colorado 80225

1. Purpose of Audit.

a. As requested by your letter, dated August 9, 1974, we have evaluated the direct labor rates, the overhead and fringe benefit rates and the escalation factors used in the contractor's proposal, dated July 31, 1974, in the amount of \$2,934,938 for a firm fixed price contract to design the Denver Mint.

b. The evaluation was performed in accordance with generally accepted auditing standards and included such tests of the contractor's data and records and such other auditing procedures as were considered necessary in the circumstances. The cost principles contained in the Federal Procurement Regulations and the practices required by the applicable Cost Accounting Standards were used as criteria in the determination of acceptable costs.

FOR OFFICIAL USE ONLY

Audit Report No. 4101-06-5-0196

c. This report may not be released to any Federal agency outside the Department of Defense without prior approval of Headquarters, DCAA, except where an agency requests the report in connection with the negotiation or administration of a contract by that agency.

2. Results of Audit.

a. We take no exception to the following direct labor rates, indirect expense rates and annual escalation rates proposed by the contractor:

Director Labor Rates:

Project Direct	\$14.50
Project Manager	14.43
Project Architect	10.14
Architect Design	9.16
Architect Product	6.64
Interiors (Color)	6.43
Specifications	8.38
Estimating	9.84
Check & Coord.	8.39
Const. Admin.	9.00
Tech. Type & Repro.	4.66
Civil Engineering	7.50
Struct. Engineering	7.50
Mech. - HVAC	8.70
Mech. Plumbing	7.29
Electrical	7.87
Process Engineering	9.52
Process Design	8.39
Process Production	6.16

Annual escalation Factor 6.0%

Indirect Expense Rates:

Fringe Benefits	20.0%
Overhead	95.0%

b. In response to your specific request, for historical cost data of providing operational and maintenance manuals, the contractor did not have

Audit Report No. 4101-06-5-0196

any previous projects of similar scope on which such data would be available.

c. The mix between Los Angeles and Denver employees is different for each of the labor categories. All personnel who are qualified to work on this proposal were included in the direct labor rate calculations.

3. Conclusions.

a. It is our opinion that the cost or pricing data submitted by the offeror may be considered to be prepared in accordance with applicable Cost Accounting Standards and FPR Subpart 1-15.2, and to be acceptable as a basis for negotiation of a rate. This statement should not be interpreted to mean that the offeror is necessarily in compliance in all respects with PL 91-379, since a final recommendation cannot be made in a preaward evaluation. Instances of noncompliance with PL 91-379 may be reported during contract performance. Nor should this statement be interpreted to mean that the data are necessarily accurate, complete and current in accordance with Public Law 87-653, since a postaward audit review may disclose evidence not now discernible.

b. During the course of our examination and at an exit conference, all factual matters were discussed with the contractor's representative, Mr. Archie Kozax, Chief Accountant, to the extent necessary to enable us to fully understand the basis of items in the proposal. All questions of fact were resolved.

c. This information contained in this report should not be used for purposes other than that immediately intended with prior consultation with representatives of this office.

Audit Report No. 4101-06-5-0196

d. For purposes of completing our assigned responsibilities, it is requested that a copy of the minutes and/or results of negotiation be forwarded to us when available.

e. Accounting counsel and any additional audit services which may be required in advance of or during the negotiation will be furnished upon request.

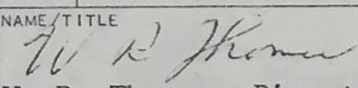
DEFENSE CONTRACT AUDIT AGENCY

for TS/ E. GELLER

JOHN R. BARNETT
Acting Branch Manager

Copy furnished:

Director of Audits (ADA), General Services Administration, Washington, DC 20405

GENERAL SERVICES ADMINISTRATION ROUTING SLIP																	
TO	CO	R1	R2	R3	R4	R5	R6	R7	R8	R9	R10						
NAME/TITLE						CORRESPONDENCE SYMBOL											
1. Mr. Dave Gess, Project						Director (8PC)											
2.																	
3.																	
4.																	
5.																	
☐ ALLOTMENT SYMBOL ☐ APPROVAL ☐ AS REQUESTED ☐ CONCURRENCE ☐ CORRECTION ☐ FILING ☐ FULL REPORT ☐ ANSWER OR ACKNOWLEDGE ON OR BEFORE _____ ☐ PREPARE REPLY FOR THE SIGNATURE OF _____						☐ HANDLE DIRECT ☐ IMMEDIATE ACTION ☐ INITIALS ☐ NECESSARY ACTION ☐ NOTE AND RETURN ☐ PER OUR CONVERSATION ☐ PER TELEPHONE CONVERSATION						☐ READ AND DESTROY ☐ RECOMMENDATION ☐ SEE ME ☐ SIGNATURE ☐ YOUR COMMENT ☐ YOUR INFORMATION ☐					
REMARKS Re: DMJM-Phillips-Reister (11-5033-PC8) Attached are copies of revised pages to appendixes affected by the last technical evaluation received. Appendix II - Pages 2 and 3 " VI - Pages 1 and 2																	
FROM	CO	R1	R2	R3	R4	R5	R6	R7	R8	R9	R10						
NAME/TITLE						CORR. SYMBOL			BUILDING, ROOM, ETC.								
 W. R. Thomas, Director Field Audit Office, Denver						ADA-8											
						TELEPHONE			DATE								
									9/18/74								

GENERAL SERVICES ADMINISTRATION ROUTING SLIP											
TO	CO	R1	R2	R3	R4	R5	R6	R7	R8	R9	R10
NAME/TITLE						CORRESPONDENCE SYMBOL					
1. Mr. Dave Gess, Project Director - 8PC											
2.											
3.											
4.											
5.											
☐ ALLOTMENT SYMBOL ☐ APPROVAL ☐ AS REQUESTED ☐ CONCURRENCE ☐ CORRECTION ☐ FILING ☐ FULL REPORT ☐ ANSWER OR ACKNOWLEDGE ON OR BEFORE _____ ☐ PREPARE REPLY FOR THE SIGNATURE OF _____ ☐ HANDLE DIRECT ☐ IMMEDIATE ACTION ☐ INITIALS ☐ NECESSARY ACTION ☐ NOTE AND RETURN ☐ PER OUR CONVERSATION ☐ PER TELEPHONE CONVERSATION ☐ READ AND DESTROY ☐ RECOMMENDATION ☐ SEE ME ☐ SIGNATURE ☐ YOUR COMMENT ☐ YOUR INFORMATION ☐											
REMARKS Re: Preaward Evaluation of A-E Proposal Submitted by DMJM-Phillips-Reister Project No. N-CO-72-600 Attached for your information are copies of Appendixes II through XI to our report on DMJM- Phillips-Reister, our case number 11-5033-PC8.											
FROM	CO	R1	R2	R3	R4	R5	R6	R7	R8	R9	R10
NAME/TITLE <i>W R Thomas</i> W. R. Thomas, Director Field Audit Office, Denver						CORR. SYMBOL ADA-8		BUILDING, ROOM, ETC.			
						TELEPHONE		DATE 9/17/74			

STATEMENT OF CONTRACTOR'S PROPOSAL AND RESULTS OF AUDIT REVIEW

		Contractor Proposal	Results of Audit			Foot- notes
			As Adjusted	Technical Adjustments	Audit . Adjustments	
<u>Design Services</u>						
<u>Direct Labor, Fringe Benefits, Overhead and Profit</u>						(1)
Sch. I	Programming Services	\$ 52,549	\$ 49,965	\$ 2,584		51,968
" II	Design Concept-					
	Production Process	117,221	118,968	(1,747)		117,221
" III	Design Concept-					
	Building and Site	120,979	72,509	48,470	104,269 (104,270)	93,709
" IV	Tentative Design-					
	Building and Site	190,591	96,902	93,689	(154,362)	134,270
" V	Production Process					
	Procurement Documents	45,874	40,793	5,081		45,874
" VI	Working Drawings-					
	Production Process	256,013	250,539	5,474		252,405
" VII	Working Drawings-					
	Building and Site	568,589	355,077	213,512	(502,440)	428,038
" VIII	Post Construction-					
	Building and Site	100,792	80,236	20,556		69,652
" IX	Post Construction-					
	Production Process	69,168	36,813	32,355		49,460
Subtotal (A)		\$1,521,776	\$1,101,802	\$419,974	\$ 0	App. III 1,242,597
<u>Other Direct Costs</u>						
Model		\$ 29,389	\$ 16,576	\$ 12,813		App. IV
Travel		34,900 32,559	33,900	(1,341)		" IV
Reproduction		16,900	8,820	8,080		" IV
Long Distance Telephone		4,400	1,400	3,000		" IV
Value Management		71,580	47,148	24,432		" V
Subtotal (B)		\$ 154,828	\$ 107,844	\$ 46,984	\$ 0	
		137,537				

APPENDIX
Page 1

() Denotes upward adjustment

	Contractor Proposal	As Adjusted	Results of Audit		Cross Reference	Foot- notes
			Technical Adjustments	Audit Adjustments		
<u>Design Services (continued)</u>						
<u>Consultants (Subcontracts)</u>	<i># 319,082</i>					
Mechanical/Electrical	\$ 345,168	\$ 291,366	\$ 10,898	\$42,904	App. VI	
Landscaping	12,117 ✓	11,655	79	383	" VII	(2)
Accoustical	79,834 <i>65,000</i>	56,990	20,175	2,669	" VIII	(3)
Firesafety	26,099 ✓	28,477	(1,252)	(1,126)	" IX	
Prime Contractor Markup on Consultants	<i>9110</i> 10,593 <i>No</i>	38,849	(32,739)	4,483		(4)
Subtotal (C)	\$ 473,811 <i>431,408</i>	\$ 427,337	\$ (2,839)	\$49,313		
Total Design Costs	\$2,150,415 <i>(1,915,596)</i>	\$1,636,983	\$464,119	\$49,313		
	<i>1,811,542</i>					
<u>Construction Supervision Services</u>						
DMJM (Principal & Engineering Services)	\$ 129,772	\$ 86,234	\$ 43,538		App. X	
Accoustical Consultant	15,000	671	14,329		" VIII	
Firesafety Consultant	12,000	5,851	5,510	\$ 639	" XI	
Landscape Consultant		6,502	(6,502)		" VII	
Value Management		3,280	(3,280)		" V	
Total Construction Supervision Costs	<i>118,936</i> \$ 156,772	\$ 102,538	\$ 53,595	\$ 639		
Total Proposed Price	\$2,307,187	\$1,739,521	\$517,714	\$49,952		

() Denotes upward adjustment

Footnotes:

- (1) Hourly rates proposed by DMJM-Phillips-Reister consisted of average rates by position classification plus fringe benefits at 20%, overhead at 95%, and fee at 10%. An assist audit performed by the Defense Contract Audit Agency at our request took no exception to the proposed rates. See Appendix I for a copy of the DCAA report.
- (2) The audit adjustment of \$383 represents an unexplained increased by DMJM to the subcontractor's proposal as follows:

Submitted by Chris G. Moritz, Inc.	<u>\$11,175</u>
Submitted by DMJM:	
Schedule I	\$ 1,495
" IV	3,522
" VII	5,600
" VIII	<u>1,500</u>
	<u>\$12,117</u>
Difference	<u>\$ 383</u>

- (3) In addition to the technical evaluation shown on Appendix VIII, a further audit adjustment of \$2,669 was made to eliminate estimated future cost escalation included in the subcontractor's proposal at 4.5%.
- (4) The adjustment amounts shown were to provide for 10% prime contractor allowance on subcontractor effort determined by the PBS technical evaluation as acceptable, but to eliminate \$4,483 that related to audit adjustments to subcontractor proposals. The net amount of \$38,849 represents 10% of \$388,488 (the amount of subcontractor costs as adjusted).

STATEMENT OF PROPOSED HOURS AND RESULTS OF GSA TECHNICAL EVALUATION
DESIGN SERVICES

Proposal Schedule Reference		Proposed Hours	Technical Evaluation			Costs Questioned
			Accepted Hours	Questioned Hours	Accepted Rate	
I	<u>Programming Services</u>					
	Project Director	80	80	0	\$34.30	\$ 0
	Project Manager	320	320	0	34.13	0
	Project Architect	320	320	0	23.98	0
	Arch. Production	240	240	0	15.71	0
	Estimating	160	160	0	23.28	0
	Tech. Type and Reports	100	100	0	11.02	0
	Civil and Structural Engineering	200	200	80	17.74	1,419
	Process Engineer	640	640	0	22.51	0
	Process Production	320	240	80	14.56	1,165
		2,380	2,220	160		\$ 2,584
		2240				
II	<u>Design Concept - Production Process</u>					
	Project Director	40	40	0	\$34.30	\$ 0
	Project Manager	400	400	0	34.13	0
	Process Engineer	1,680	1,680	0	22.51	0
	Process Designers	2,400	2,400	0	19.84	0
	Process Production	1,000	1,120	(120)	14.56	(1,747)
	Tech. Type and Reports	200	200	0	11.02	0
		5,720	5,840	(120)		\$ (1,747)

() Denotes upward adjustment

Proposal
Schedule
Reference

Proposed Hours	Technical Evaluation			Costs	
	Accepted Hours	Questioned Hours	Accepted Rate	Questioned	

III

<u>Design Concept-</u>						
<u>Building and Site Facilities</u>						
Project Director	50	50	0	\$34.30	\$	0
Project Manager	480	480	200	280	34.13	9,556
Project Architect	1,120	1120	640	480	23.98	11,510
Architect Design	1,120		960	160	21.66	3,466
Estimating	160	160	200	(40)	23.28	(931)
Check and Coordinate	60		0	60	19.84	1,190
Tech. Type and Reports	240		160	80	11.02	882
Civil and Structural Engineering	1,500	700	640	860	17.74	15,256
Arch. Production	1,120		640	480	15.71	7,541
	5,850		3,490	2,360		\$ 48,470

IV	<u>Tentative Design Services-</u>				
	<u>Building and Site Facilities</u>				
Project Director	70	70	0	\$34.30	\$ 0
Project Manager	400	400	0	34.13	0
Project Architect	800	800	800	23.98	19,184
Arch. Design	2,400	1,200	1,200	21.66	25,992
Arch. Production	1,800	1,200	600	15.71	9,426
Interiors	60	40	20	15.21	304
Specifications	200	200	0	19.82	0
Estimating	240	360	(120)	23.28	(2,794)
Check and Coordinate	80	0	80	19.84	1,587
Tech. Type and Reports	360	160	200	11.02	2,204
Civil and Structural Engineering	<u>3,330</u>	<u>1,200</u>	<u>2,130</u>	17.74	<u>37,786</u>
	9,740	4,830	4,910		\$ 93,689

() Denotes upward adjustment

Proposal
Schedule
Reference

Proposed Hours	Technical Evaluation			Costs Questioned
	Accepted Hours	Questioned Hours	Accepted Rate	
20	20	0	\$34.30	\$ 0
240	240	120	34.13	4,096
800	720	80	22.51	1,801
240	240	0	20.58	0
240	240	0	18.61	0
240	240	0	19.82	0
160	120	40	23.28	931
100	100	0	11.02	0
0	120	(120)	14.56	(1,747)
2,040	1,920	120		\$ 5,081

<u>VI Production Process Installation</u>					
<u>Documents-Working Drawings</u>					
Project Director	120	120	0	\$34.30	\$ 0
Project Manager	1,040	520	520	34.13	17,748
Process Engineer	1,200	3,541	(2,341)	22.51	(52,696)
Mechanical Engineer	1,200	1,771	(571)	20.58	(11,751)
Electrical Engineer	1,200	1,770	(570)	18.61	(10,608)
Process Design	2,400	0	2,400	19.84	47,616
Process Draftsman (Production)	4,800	3,543	1,257	14.56	18,302
Specifications	400	500	(100)	19.82	(1,982)
Estimating	200	300	(100)	23.28	(2,328)
Check and Coordinate	200	0	200	19.84	3,968
Tech. Type and Reports	400	1,040	(640)	11.02	(7,053)
Structural Engineer	240	0	240	17.74	4,258
	13,400	13,105	295		\$ 5,474

() Denotes upward adjustment

Proposal
Schedule
Reference

Proposed Hours	Technical Evaluation			Costs Questioned
	Accepted Hours	Questioned Hours	Accepted Rate	
140	140	0	\$34.30	\$ 0
1,240	720	520	34.13	17,748
1,880	1,220	660	23.98	15,827
1,080	720	360	21.66	7,798
12,240	7,920	4,320	15.71	67,867
240	240	0	15.21	0
960	960	0	19.82	0
620	540	80	23.28	1,862
280	0	280	19.84	5,555
1,160	1,080	80	11.02	882
11,570	6,160	5,410	17.74	95,973
31,410	19,700	11,710		\$213,512

VIII Post Construction Contract Award				
<u>Services-Building and Site</u>				
Project Director	40	40	0	\$34.30 \$ 0
Project Manager	660	420	240	34.13 8,191
Project Architect	520	470	50	23.98 1,199
Arch. Design	240	240	0	21.66 0
Arch. Production	640	600 1,610	(970)	15.71 (15,239)
Interiors (Color)	40	40	0	15.21 0
Check and Coordinate	240	0	240	19.84 4,762
Tech. Type and Reports	240	240	0	11.02 0
Civil and Structural Engineering	2,320	1,100	1,220	17.74 21,643
	4,940	4,160	780	\$ 20,556

() Denotes upward adjustment

Proposal
Schedule
Reference

	Proposed <u>Hours</u>	Technical Evaluation			<u>Costs Questioned</u>
		<u>Accepted Hours</u>	<u>Questioned Hours</u>	<u>Accepted Rate</u>	
IX <u>Post Construction Contract Award</u>					
<u>Services - Production Process</u>					
Project Director	40	0	40	\$34.30	\$ 1,372
Project Manager	160	0	160	34.13	5,461
Process Engineer	1,250	900	350	22.51	7,879
Process Design	100	0	100	19.84	1,984
Process Production	400	400	0	14.56	0
Mechanical Engineer	600	350	250	20.58	5,145
Electrical Engineer	500	0	500	18.61	9,305
Structural Engineer	180	0	180	17.74	3,193
Tech. Type and Reports	140	320	(180)	11.02	(1,984)
	3,370	1,970	1,400		\$ 32,355
Total Technical Adjustments	<u>78,850</u>	<u>57,235</u>	<u>21,615</u>		<u>\$419,974</u>

() Denotes upward adjustment

DMJM-Phillips-Reister

STATEMENT OF PROPOSED OTHER DIRECT COSTS
AND RESULTS OF TECHNICAL EVALUATION
(PRIME CONTRACTOR EFFORT)

<u>Proposal Reference</u>	<u>Models</u>		<u>Travel</u>		<u>Reproduction</u>		<u>Long Distance Telephone</u>	
	<u>Proposed</u>	<u>Accepted</u>	<u>Proposed</u>	<u>Accepted</u>	<u>Proposed</u>	<u>Accepted</u>	<u>Proposed</u>	<u>Accepted</u>
Schedule I			\$ 4,518	\$ 4,500	\$ 250	\$ 250	\$ 250	
" II	\$ 8,450	\$ 6,626	3,608	3,300	350	350	250	
" III			3,608	3,700	500	250	250	\$ 250
" IV	20,939	9,950		6,300	3,060	2,750	250	300
" V			6,100	3,700	320	320	150	
" VI			9,150	3,700	1,620	1,500	2,500	
" VII			1,525	4,800	10,200	2,900	450	500
" VIII				2,700	100	200	150	150
" IX			4,050	1,200	500	300	150	200
Subtotal	\$29,389	\$16,576	\$32,559	\$33,900	\$16,900	\$8,820	\$4,400	\$1,400
" X				1,000				
Total	<u>\$29,389</u>	<u>\$16,576</u>	<u>\$32,559</u>	<u>\$34,900</u>	<u>\$16,900</u>	<u>\$8,820</u>	<u>\$4,400</u>	<u>\$1,400</u>

2

V

DMJM-Phillips-Reister

STATEMENT OF PROPOSED VALUE MANAGEMENT COSTS
AND RESULTS OF GSA TECHNICAL EVALUATION

	<u>Proposed Hours</u>	<u>Technical Evaluation</u>		<u>Accepted Rate</u>	<u>Costs Questioned</u>
		<u>Accepted Hours</u>	<u>Questioned Hours</u>		
Schedule I	0				
Schedule II	320	100	220	\$20.50	\$ 4,510
Schedule III	640	400	240	\$18.00	4,320
Schedule IV	1,120	620	500	\$17.50	8,750
Schedule V	160	240	(80)	\$20.50	(1,640)
Schedule VI	480	256	224	\$20.50	4,592
Schedule VII	600	544	56	\$17.50	980
Schedule VIII	400	280	120	\$17.50	2,100
Schedule IX	160	120	40	\$20.50	<u>820</u>
				Subtotal	\$24,432
Schedule X	0	160	(160)	\$20.50	<u>(3,280)</u>
				Total	<u>\$21,152</u>

() Denotes upward adjustment

STATEMENT OF PROPOSED MECHANICAL/ELECTRICAL COSTS
AND RELATED TECHNICAL AND AUDIT ADJUSTMENTS
SWANSON-RINK & ASSOCIATES, INC.
(DESIGN SERVICES)

	As Submitted			As	Technical	Audit	Foot-
	Rate	Hours	Amount	Adjusted	Adjustments	Adjustments	notes
<u>Direct Labor</u>							
Principals (Officers)		913	\$ 16,945	\$ 15,776	\$ 1,169		
Chief Engr./Spec.Proj.Mgrs.		3,154	32,518	30,930	1,588		
Sr. Engineers		2,820	23,209	22,756	453		
Engineers (Sr. Designers)		5,635	40,009	39,760	249		
Jr. Engineers (Designers)		3,775	22,499	20,502	1,997		
Sr. Draftsman		3,645	18,261	15,782	2,479		
Draftsman		3,835	14,803	13,278	1,525		
Misc.Type & Tech.Reports		735	2,631	2,184	447		
Computation Errors			976			\$ 976	(1)
Subtotal		24,512	\$171,851	\$160,968	\$ 9,907	\$ 976	(2)
<u>Overhead</u>	79.6%		136,793	99,092		37,701	(3)
Subtotal			\$308,644	\$260,060	\$ 9,907	\$38,677	
<u>Profit</u>	10.0%		30,864	26,006	991	3,867	(4)
Subtotal			\$339,508	\$286,066	\$10,898	\$42,544	
<u>Other Direct Costs</u>			5,300	5,300			
Subtotal			\$344,808	\$291,366	\$10,898	\$42,544	
Effect of Rounding Off			360			360	(5)
Total			<u>\$345,168</u>	<u>\$291,366</u>	<u>\$10,898</u>	<u>\$42,904</u>	(6)

✓ 319,082

Footnotes:

- (1) Computation errors in proposal - costs not supported.
- (2) The technical adjustment as shown reflects the effect of substituting acceptable hours as determined by the PBS technical evaluation and also eliminates escalation of labor rates for subsequent years that was included in the subcontractor's proposal. The amounts were calculated as follows:

	<u>Accepted Hours</u>	<u>Accepted Rate</u>	<u>Accepted Amount</u>
Principals (Officers)	850	\$18.56	\$ 15,776
Chief Engineers/Spec. Project Mgrs.	3,000	10.31	30,930
Sr. Engineers	2,765	8.23	22,756
Engineers (Sr. Designers)	5,600	7.10	39,760
Jr. Engineers (Designers)	3,440	5.96	20,502
Sr. Draftsman	3,150	5.01	15,782
Draftsman	3,440	3.86	13,278
Misc. Type & Tech. Reports	<u>610</u>	<u>3.58</u>	<u>2,184</u>
Total	<u>22,855</u>		<u>\$160,968</u>

- (3) Adjustment to overhead rate of 61.56% developed by audit. See Appendix VI(a).
- (4) Adjustment to profit represents 10% of the audit adjustment to overhead.
- (5) Swanson-Rink rounded costs upward - these costs are not supported.
- (6) Swanson-Rink included \$14,000 for Value Engineering in their proposal which DMJM did not include. The Contracting Officer may wish to consider this as an additional allowable cost.

DMJM-Phillips-Reister

STATEMENT OF OVERHEAD RATE SUBMITTED BY SUBCONTRACTOR
AND GSA AUDITOR'S RELATED ADJUSTMENTS
SWANSON-RINK & ASSOCIATES, INC. (MECHANICAL/ELECTRICAL)

	Calendar Year 1973 Costs	Rate	Foot- notes
As Submitted:			
(a) Direct Labor	<u>\$536,000</u>		
(b) Overhead (Rate = $b \div a$)	\$426,492	<u>79.57%</u>	
Less Audit Adjustments:			
Incentive Compensation	\$72,000		(1)
Building Repairs & Maintenance	7,068		(2)
Auto Insurance	758		(3)
Other Expenses	10,000		(4)
Accounting & Legal	1,688		(4)
Overtime Premium	<u>5,015</u>	<u>96,529</u>	(5)
(c) Overhead, As Adjusted (Rate = $c \div a$)	<u>\$329,963</u>	<u>61.56%</u>	

Footnotes:

- (1) Based on discussion with the Controller, Swanson-Rink & Associates (SRA) and review of historical records, we concluded that this was a distribution of 1973 profits and not additional compensation as set forth in the FPRs, Paragraphs 1-15.205-6(a)(2)(i), (a)(3), and (c). The \$72,000 was distributed only to the two principals of the firm (major stockholders), five associate partners (minor stockholders), and one senior engineer (non-stockholder). The contractor had not entered into any written agreement with the employees prior to making this payment nor was there an established plan consistently followed from year to year. No incentive compensation was paid by SRA during calendar year 1972.
- (2) The contractor charged to operating expense the cost of refacing the building with aggregate panel. This was inconsistent with his leasehold improvement policy of capitalizing certain costs. Therefore, pursuant to FPR 1-15.205-20, it was our opinion that this item should be capitalized and subject to depreciation and that only a portion of the cost should be allowable as depreciation expense. Our adjustment was calculated on the following factors: cost of improvement, \$7,250; remaining life of lease at time of expenditure, 159 months; monthly amortization rate, \$45.60; cost allocated to four months of 1973, \$182; cost deferred to future operating periods, \$7,068.

- (3) The audit adjustment of \$758 represents one-half of the cost of auto insurance for 1973. When eliminating one-half of the cost of operating the company's fleet of automobiles as a direct cost, the Controller of SRA had overlooked one-half of the auto insurance cost.
- (4) These costs were found to be associated with a management consultant study fee (\$10,000) and related legal fees (\$1,688). The management study resulted in a reorganization of SRA and the legal fees were expended to draw up a new stock restriction agreement affecting the sale of the corporate stock. Therefore, pursuant to FPR 1-15.205-23, these costs were eliminated from overhead as unallowable organization costs.
- (5) We have eliminated the premium portion of overtime labor cost since proposed costs were not requested on an overtime basis.

VII

DMJM-Phillips-Reister

STATEMENT OF PROPOSED LANDSCAPE SUBCONTRACT COSTS
AND RESULTS OF TECHNICAL EVALUATION
(CHRIS G. MORITZ, INC.)

Schedule		Proposed Hours	Technical Evaluation			Costs Questioned
			Accepted Hours	Questioned Hours	Accepted Rate	
III	Landscape Architect	40	50	(10)	\$27.09	\$ (271)
	Landscape Design	20	26	(6)	14.52	(87)
	Landscape Draftsman	<u>10</u>	<u>16</u>	<u>(6)</u>	12.08	<u>(72)</u>
		70	92	(22)		\$ (430)
IV	Landscape Architect	80	40	40	\$27.09	\$ 1,084
	Landscape Design	60	92	(32)	14.52	(465)
	Landscape Draftsman	<u>40</u>	<u>24</u>	<u>16</u>	12.08	<u>193</u>
		180	156	24		\$ 812
VII	Landscape Architect	80	106	(26)	\$27.09	\$ (704)
	Landscape Design	120	138	(18)	14.52	(261)
	Landscape Draftsman	<u>140</u>	<u>40</u>	<u>100</u>	12.08	<u>1,208</u>
		340	284	56		\$ 243
VIII	Landscape Architect		20	(20)	\$27.09	\$ (542)
	Landscape Design		20	(20)	14.52	(290)
	Landscape Draftsman	<u> </u>	<u>8</u>	<u>(8)</u>	12.08	<u>(97)</u>
		<u>0</u>	<u>48</u>	<u>(48)</u>		<u>\$ (929)</u>
	Total Hours Questioned	<u>590</u>	<u>580</u>	<u>10</u>		\$ (304)
Reimbursables:						
	Proposed by Moritz, Inc.		\$558			
	Accepted - Technical Evaluation		<u>175</u>			<u>383</u>
	Costs Questioned - Schedules I through IX					\$ 79
X	Landscape Architect	0	240	(240)	\$27.09	<u>\$(6,502)</u>
	Total Costs Questioned - Technical Evaluation					<u>\$(6,423)</u>

() Denotes upward adjustment

VIII

7

DMJM-Phillips-Reister

STATEMENT OF PROPOSED ACCOUSTICAL SUBCONTRACT COSTS
AND RESULTS OF TECHNICAL EVALUATION
(BOLT BERANEK AND NEWMAN, INC.)

	<u>I</u>	<u>II & III</u>	<u>IV</u>	<u>V</u>	<u>VI</u>	<u>VII</u>	<u>VIII</u>	<u>Subtotal</u>	<u>X</u>	<u>Total</u>
<u>Evaluation of Hours:</u>										
<u>Proposed Hours:</u>										
Supervisory Consultants	144	580	68	52		58	68	970		970
Senior Consultants	116	496	100	12		45	80	849		849
Consultants		10						10		10
Staff Assistants	<u>24</u>	<u>160</u>	<u>80</u>			<u>20</u>	<u>10</u>	<u>294</u>		<u>294</u>
	284	1,246	248	64	0	123	158	2,123	0	2,123
 <u>Accepted Hours:</u>										
Supervisory Consultants	40	267	112	56	16	85	62	638	100	738
Senior Consultants	40	267	112	56	16	85	62	638	100	738
Consultants										0
Staff Assistants	<u>16</u>	<u>130</u>	<u>40</u>	<u>16</u>	<u>12</u>	<u>20</u>	<u>16</u>	<u>250</u>		<u>250</u>
	96	664	264	128	44	190	140	1,526	200	1,726
 <u>Hours Questioned:</u>										
Supervisory Consultants	104	313	(44)	(4)	(16)	(27)	6	332	(100)	232
Senior Consultants	76	229	(12)	(44)	(16)	(40)	18	211	(100)	111
Consultants		10						10		10
Staff Assistants	<u>8</u>	<u>30</u>	<u>40</u>	<u>(16)</u>	<u>(12)</u>		<u>(6)</u>	<u>44</u>		<u>44</u>
	<u>188</u>	<u>582</u>	<u>(16)</u>	<u>(64)</u>	<u>(44)</u>	<u>(67)</u>	<u>18</u>	<u>597</u>	<u>(200)</u>	<u>397</u>

() Denotes upward adjustment

	<u>Schedules I through IX</u>			<u>Schedule X</u>		
	<u>Hours</u>	<u>Accepted Rates</u>	<u>Costs Questioned</u>	<u>Hours</u>	<u>Accepted Rates</u>	<u>Costs Questioned</u>
<u>Costs Questioned:</u>						
<u>Labor Hours:</u>						
Supervisory Consultants	332	\$15.26	\$ 5,066	(100)	\$15.26	\$(153)
Senior Consultants	211	9.96	2,102	(100)	9.96	(100)
Consultants	10	8.40	84			
Staff Assistants	<u>44</u>	5.71	<u>251</u>			
	597		\$ 7,503	(200)		\$(253)
Overhead @ 97%			<u>7,278</u>			<u>(245)</u>
			\$14,781			\$(498)
G&A @ 19.6%			<u>2,897</u>			<u>(98)</u>
			\$17,678			\$(596)
Profit @ 12.5%			<u>2,210</u>			<u>(75)</u>
			\$19,888			<u>\$(671)</u>
 <u>Reimbursables:</u>						
Proposed by Bolt Beranek and Newman		\$2,535				
Accepted by Technical Evaluation		<u>2,300</u>	235			
G&A and Profit			<u>52</u>			
Total Costs Questions			<u>\$20,175</u>			<u>\$(671)</u>

() Denotes upward adjustment

18

DMJM-Phillips-Reister

STATEMENT OF PROPOSED FIRESAFETY CONSULTANT COSTS
AND RELATED TECHNICAL AND AUDIT ADJUSTMENTS
(DESIGN SERVICES)

	<u>As Submitted</u>			<u>As Adjusted</u>	<u>Technical Adjustments</u>	<u>Audit Adjustments</u>	<u>Foot- notes</u>
	<u>Rate</u>	<u>Hours</u>	<u>Amount</u>				
<u>Direct Salary Costs</u>							
Principal		51	\$ 673	\$ 484	\$ 189		
Project Administrator		42	417	558	(141)		
Project Engineer 1		442	4,481	4,525	(44)		
Project Engineer 2		<u>175</u>	<u>1,589</u>	<u>1,416</u>	<u>173</u>		
Subtotal		710	\$ 7,160	\$ 6,983	\$ 177	\$ 0	(1)
<u>Other Direct Costs</u>							
Travel			2,520	3,410	(890)		
Telephone, Duplicating			<u>300</u>	<u>725</u>	<u>(425)</u>		
Subtotal			\$ 9,980	\$11,118	\$ (1,138)	\$ 0	(2)
<u>Overhead on Direct Labor</u>	149.32%		<u>10,691</u>	<u>10,935</u>		<u>(244)</u>	(3)
Subtotal			\$20,671	\$22,053	\$ (1,138)	\$ (244)	
<u>G&A on Total Cost</u>	14.78%		<u>3,055</u>	<u>3,835</u>		<u>(780)</u>	(4)
Subtotal			\$23,726	\$25,888	\$ (1,138)	\$ (1,024)	
<u>Profit</u>	10.00%		<u>2,373</u>	<u>2,589</u>	<u>(114)</u>	<u>(102)</u>	(5)
Total			<u>\$26,099</u>	<u>\$28,477</u>	<u>\$ (1,252)</u>	<u>\$ (1,126)</u>	

() Denotes upward adjustment

Footnotes:

- (1) The technical adjustment as shown reflects the effect of substituting acceptable hours as determined by the PBS technical evaluation and also eliminates escalation of labor rates for subsequent years that was included in the subcontractor's proposal. The amounts were calculated as follows:

	<u>Accepted Hours</u>	<u>Accepted Rate</u>	<u>Accepted Amount</u>
Principal	38	\$12.74	\$ 484
Project Administrator	58	9.62	558
Project Engineer 1	466	9.71	4,525
Project Engineer 2	<u>160</u>	8.85	<u>1,416</u>
Total	<u>722</u>		<u>\$6,983</u>

- (2) Proposed other direct costs were adjusted to the amounts shown as acceptable by the PBS technical evaluation.
- (3) An overhead rate of 98.35% was substituted for the proposed 149.32%. The adjustment was based on an overhead rate determination performed by the GSA Chicago Audit Office pursuant to other GSA contract work. The 98.35% rate was considered acceptable by the auditor based on FY 1974 experience for the period ending February 28, 1974.
- (4) A G&A rate of 17.39% was substituted for the proposed rate of 14.78% as being more representative of actual experience and as determined by the same audit by the Chicago Audit Office.
- (5) The adjustments to profit were calculated as 10% of the total technical and audit adjustments respectively.

DMJM-Phillips-Reister

STATEMENT OF PROPOSED COSTS FOR
CONSTRUCTION SUPERVISION SERVICES
AND RESULTS OF TECHNICAL EVALUATION
(PRIME CONTRACTOR EFFORT)

Proposed

\$129,772

Technical Evaluation:

	<u>Accepted Hours</u>	<u>Accepted Rate</u>	<u>Extension Amount</u>
Principal	212	\$34.30	\$ 7,272
Project Architect	832	23.98	19,951
Structural Engineer	832	17.74	14,760
Electrical Engineer	832	18.61	15,484
Civil Engineer	600	17.74	10,644
Mechanical Engineer	<u>832</u>	20.58	<u>17,123</u>
	4,140		\$85,234

Travel (see Appendix IV)

1,000

Proposal As Adjusted

86,234

Technical Adjustments

\$ 43,538

CONGRESSIONAL BILLS

DMJM-Phillips-Reister

STATEMENT OF PROPOSED FIRESAFETY CONSULTANT COSTS
AND RESULTS OF TECHNICAL AND AUDIT ADJUSTMENTS
(CONSTRUCTION SUPERVISION SERVICES)Foot-
notesProposed by DMJM-Phillips-Reister:200 hours @ \$60 per hour -
including travel

\$12,000

Submitted by Rolf Jensen &Associates to DMJM:

Project Engineer cost per hour:

Current rate

\$ 9.71

1974-76 escalation

1.47

\$11.18

Direct labor overhead @ 149.32%

16.69

G&A on costs @ 14.78%

4.12

Profit @ 10%

3.20

Proposed rate

\$35.19Reimbursement of travel and other
direct expenses at prevailing costsTechnical Evaluation:

Allowable cost:

160 hours @ \$31.50

\$5,040

Travel - 5 trips @ \$290

1,450

\$6,490

Technical adjustment

5,510

Audit Evaluation:

Subcontractor cost per hour:

Current rate

\$ 9.71

(1)

Escalation

0

(2)

\$ 9.71

Direct labor overhead @ 98.35%

9.55

(3)

G&A on costs @ 17.39%

3.35

(4)

Profit @ 10%

2.26

Adjusted rate per hour

\$24.87

Allowable cost:

160 hours @ \$24.87

\$3,979

Travel - 5 trips @ \$290

1,450

G&A and profit on travel

422

\$5,851

Audit adjustment

639

Proposed cost as adjusted

\$ 5,851

Footnotes:

- (1) Proposed hourly rate was considered acceptable during recent audit by GSA Chicago Audit Office.
- (2) Adjustment to eliminate escalation since contractor stated proposal was being submitted based on current salaries without escalation.
- (3) Overhead rate of 98.35%, determined acceptable by recent GSA audit, was substituted for proposed rate of 149.32%.
- (4) G&A rate of 17.39%, determined reasonable by recent GSA audit, was substituted for proposed rate of 14.78%

XIX

August 23, 1974

Project No. N-CO-72-600
New Denver Mint

TECHNICAL EVALUATION OF A-E DESIGN PROPOSAL

The following is a technical evaluation of the A-E's design proposal furnished by DMJM - Phillips-Reister, Inc. on July 31, 1974. This proposal is in response to the revised draft contract issued July 16, 1974 for the above noted project. The following data is a summary of the input provided by GSA design Architects, Engineers and information furnished by the Department of Treasury.

GROSS AREA - CONSTRUCTION COSTS

See the technical evaluation dated December 20, 1973 for appropriate comments on the gross area and construction costs which apply except as follows. The draft contract will be revised to read 450,000 gross square feet in lieu of 452,000 square feet. The estimated construction costs information in the draft contract will be revised to provide an estimated building construction contract award amount of \$24,000,000 as of September 1, 1974. Four million dollars has been ear-marked for escalation from September 1, 1974 to April, 1976. The Process Equipment estimate will be revised to provide for estimated Process Equipment costs of \$14 million as of September 1, 1974 with \$3 million ear-marked for escalation from September 1, 1974 to April, 1976.

PRODUCTION PROCESS EQUIPMENT COSTS

Attached (included in the Process Equipment estimate) is a summary of the estimated Production Process Equipment Costs furnished by the Bureau of the Mint on August 14, 1974.

TIME SCHEDULE

The difference in the Government's previous estimate and the A-E's estimate for the various phases of work have been substantially resolved and are now recorded in a Project Schedule dated July, 1974. This technical evaluation is based on that Project Schedule, a copy of which is attached.

PROPOSED FEE

Building and Facilities

Attached is a, "Summary of all Government Estimates," and a document entitled, "Technical Evaluation of A-E's Design Proposal," dated August 23, 1974 which provides an estimate of the primary or the basic Architectural design services, and some miscellaneous non-production estimated costs, and a summary of profit and commission costs which appear to be applicable to this project.

Process Equipment

Attached is a revised technical evaluation dated August 14, 1974 and furnished by Mr. Frank Rhea of the Bureau of the Mint which covers the estimated costs of the Process Equipment. Supplemental information is included throughout this technical evaluation which furnishes support data to the Process Equipment estimate in the area of Value Engineering, travel, shop drawings, etc.

MECHANICAL AND ELECTRICAL ESTIMATES

Attached is a document titled, "Design Fee Evaluation for Mechanical and Electrical Portions of the Work," dated August 16, 1974 which covers the major portion of the mechanical and electrical estimating work of this evaluation.

TRAVEL

Attached is a document titled, "Estimated A-E Travel," dated August 23, 1974 which covers the appropriate comments and a detailed estimate of the travel for this project. It is proposed that the special purpose travel costs for this project be established as a reimbursable item not to exceed a maximum amount. Reimbursement will be based on the actual travel costs including, but not limited to, air lines, taxi, private automobile, at the time travel is utilized. However, commercial travel will be limited to coach accommodations and the per diem rate will be fixed during this negotiation. Normal A-E administrative travel will be included in the fixed price fee as normal overhead.

VALUE ENGINEERING

Attached is a document titled, "Value Engineering Requirements and Basic Consideration for the New Denver Mint," dated August 22, 1974. This document includes appropriate comments on the scope of VE work, requirements and restrictions thereto.

ACOUSTICAL CONSULTANT SERVICES

Attached is a document titled, "Acoustical Consultant Estimate," dated August 13, 1974. It provides a detailed estimate of Acoustical Consultant Services. The cost of this Acoustical Consultant Service is included in the previously noted architectural design fee. However, it is broken out in detail here for the purpose of negotiating an appropriate fee for this special consultant.

FIRESAFETY CONSULTANT SERVICES

Attached is a document titled, "Firesafety Consultant Services," dated August 13, 1974. It provides a detailed estimate of Firesafety Consultant Services. The cost of this Firesafety Consultant Service is included in the previously noted architectural design fee. However, it is broken out in detail here for the purpose of negotiating an appropriate fee for this special consultant.

LANDSCAPE CONSULTANT SERVICES

Attached is a document titled, "Landscape Consultant Services," dated August 13, 1974. It provides a detailed estimate of Landscape Consultant Services. The cost of this Landscape Consultant Service is included in the previously noted architectural design fee. However, it is broken out in detail here for the purpose of negotiating an appropriate fee for this special consultant.

ESTIMATED CONSTRUCTION SUPERVISION SERVICES

This estimate provides a maximum for the various consulting services which are to be furnished during the construction stage at the request of the Contracting Officer. During this negotiation it is only necessary to reach an agreement on the unit prices, as it is felt the total manhours are approximately correct and some variation between the various classifications may be expected.

GENERAL

As evidenced by the above noted estimates, there is a considerable variation between the A-E's proposal and the Government's estimate. However, it is felt upon receipt of the audit report we will be in a position to enter into detailed negotiations with the Architect-Engineer and a successful A-E design contract will result.

August 23, 1974

SUMMARY OF ALL GOVERNMENT ESTIMATES

Estimates of Phases of Work by Schedule

	A-E	GSA
I Program Services	\$ 72,417	\$ 61,834
II Equipment Concepts	176,831	146,069
III Building Concepts	240,288	139,304
IV Building Tentatives	350,941	224,270
V Equipment Procurement Documents	89,350	72,239
VI Equipment Working Drawings	515,461	434,889
VII Building Working Drawings	975,741	680,632
VIII Building Post Construction	223,304	148,845
IX Equipment Post Construction	95,790	54,106
X Construction Supervision	<u>182,208</u>	<u>129,982</u>
Totals	\$2,922,331	\$2,092,220

Estimates of Work by Various ClassificationItems which are subject to the 6% statutory limitations

	A-E	GSA
Basic Design Fee	\$2,371,190	\$1,583,175
10% Profit on Subcontractors	* 33,212	37,751
10% Commission on Consultants	10,500	6,825
Escalation	* 197,987	149,538
	<u>\$2,381,690</u>	<u>\$1,830,334</u>

Items not subject to the 6% limitation

	A-E	GSA
Program Services	56,949	53,045
Travel	32,559	33,900
Models and Renderings	36,352	18,576
Miscellaneous	21,300	9,220
Value Engineering	95,100	59,268
Acoustical Consultant	80,000	** 46,235
Firesafety Consultant	25,000	* 22,009
Landscape Architect	* 12,117	* 11,112
Construction Supervision	182,203	129,982
	<u>\$ 529,468</u>	<u>\$ 314,931</u>
Sub Total	\$ 529,468	\$ 314,931
Total	*** \$2,911,158 ±	\$2,092,220

* Included in Basic Design Fee

** Included in Basic Design Fee except for \$10,940 which applies to Process Design

*** Unresolved error of \$11,173

DL6

August 23, 1974

Project No. N-CO-72-600
New Denver Mint

TECHNICAL EVALUATION OF A-E'S DESIGN PROPOSAL

Architectural and Structural Costs

Administrative and Support Building

60.1% X 9,100,000 X 4.2%

\$229,702.00

Production Building

68.6% of 13,500,000 X 3.6%

333,396.00

Site

1,400,000 X 4.2%

58,800.00

\$621,898.00

Estimated Cost of Design Fees for Architectural and Structural

Schedule I, Item 1A, Program Services

See Frank Rhea's evaluation.

Schedule III, Item 1B(2), Concepts for Buildings

Project Director	50 hours	@ 34.30	1,715.00
Project Manager	200 hours	34.13	6,826.00
Project Architect	640 hours	23.93	15,347.00
Architect Design	960 hours	21.66	20,794.00
Architect Prod.	640 hours	15.71	10,054.00
Estimates	200 hours	23.28	4,656.00
Technical Type and Report	160 hours	11.02	1,763.00
Civil Engineer	320 hours	17.74	5,677.00
Structural Engineer	320 hours	17.74	5,677.00

Basic Fee

\$72,509 "

Reproduction

Long distance telephone

250

250

Total

\$73,009 "

C-1

Schedule IV, Item 1C, Tentative Design For Buildings

Project Director	70 hours @	34.30	2,401	
Project Manager	400 hours	23.98	14,388	9,592.00
Architect Design	1,200 hours	21.66	25,992	
Architect Production	1,200 hours	15.71	18,852	
Interiors	40 hours	15.21	608	
Specifications	200 hours	19.82	3,964	
Estimating	360 hours	23.28	8,381	
Technical Type and Report	160 hours	11.02	1,763	
Civil Engineering	600 hours	17.74	10,644	
Structural Engineering	600 hours	17.74	10,644	

Basic Fee

\$111,289

Reproduction: drawings	\$1,200	
specifications	300	
reports	150	
estimates	100	
	<u>\$1,750</u>	=

92,841

Telephone (long distance)

1,750
300

Model:

Use 1/16" scale $\therefore$ 1,000' X 1,400' = 6' X 8', two sections with plastic cover

Architect labor 40 hours @ \$20	=	800
Model materials	=	1,200
Draftsman labor 400 hours @ \$15	=	6,000

Base and Cover

300

Contours: Materials

150

Draftsman labor 100 hours @ \$15 =

1,500

\$ 9,950

\$ 9,950

Color renderings, 2 @ \$1,000 =

2,000

Total

\$125,289

Schedule VII, Item 1E(2), Working Drawings for Buildings and Site

Project Director	140 hours @	34.30	4,802
Project Manager	720	34.13	24,574
Project Architect	1,220	23.98	29,256
Architect Design	720	21.66	15,595
Architect Production	7,920	15.71	124,423
Interiors	240	15.71	3,770
Specifications	960	19.82	19,027
Estimating	540	23.23	12,571
Technical Type and Report	1,080	11.02	11,902
Civil Engineer	400	17.74	7,096
Structural Engineer	5,760	17.74	102,182

Basic Fee

\$355,198

Reproduction:	drawings	\$2,000	
	specifications	500	
	reports	200	
	estimates	200	
		\$2,900	=

2,900

Long Distance Telephone

500

Total

\$358,598

Schedule VIII, Item F(1) a, b, c, d, e, g, h, i - IF(2),
Post Construction Contract Award Services

Architectural - Structural

Project Director	40 hours @	34.30	1,372
Project Manager	420	34.13	14,335
Project Architect	470	23.98	11,271
Architect Design	240	21.66	5,198
Architect Production	1,610	15.71	25,293
Interiors	40	15.71	628
Technical Type and Report	240	11.02	2,645
Civil Engineer	160	17.74	2,838
Structural Engineer	940	17.74	16,676

\$ 80,256

SWANSON
RINK { Mechanical - Electrical

Sr. Engineers	240 hours @	20.50	4,920
Design Engineers	480	18.50	8,880
Draftsman	800	16.00	12,800
Clerical	320	11.00	3,520
			<u>30,120</u>

\$ 30,120

Operation and Maintenance Manuals (Buildings)
 (Lump sum based on experiences of this office)

6,500

Basic Fee

\$116,876

Reproduction

200

Long Distance Telephone

150

Total

\$117,226

Schedule IX, Process Equipment

Sr. Engineer	350 hours @	22.50	7,875
Process Engineer	900	20.00	18,000
Draftsman	400	14.50	5,800
Clerical	320	11.00	<u>3,520</u>
			\$35,195
			\$ 35,195
Operation and Maintenance Manuals (Equipment)			7,500
(Lump sum based on experiences of this office)			<u>7,500</u>
	Basic Fee		\$ 42,695
Reproduction			300
Long Distance Telephone			<u>200</u>
	Total		\$ 43,195

SUMMARY

Schedule III, Item 1B, Concepts	\$ 73,009
Schedule IV, Item 1C, Tentative	125,289
Schedule VII, Item 1E, Working Drawings	358,598
Schedule VIII, Item 1F, Building Post Contract Services	117,226
Schedule IX, Item 1F, Equipment Post Contract Services	<u>43,195</u>
Total	\$717,317

Note: This estimate does not include travel, construction supervision or design consulting fees.

UNITED STATES GOVERNMENT

Memorandum

Cur
[Signature]

TO : David Gess, Project Director, GSA, Region VIII DATE: August 14, 1974

FROM : *Frank W. Rhea*
Frank W. Rhea, Facilities Project Manager, Bureau of the Mint

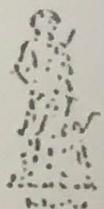
SUBJECT: Technical Evaluation of A/E Design Proposal, Project No. N-CO-72-600,
New Denver Mint

Submitted herewith are technical evaluations of portions of the DMJM-Phillips/Reister Design Proposal dated July 31, 1974. My evaluations cover the production process A/E activities, plus Programming Services for both the production process and the building/site.

Attachment A is an update of the estimated costs of the production process equipment, including equipment for the special coins and medals portion of the new mint.

5 Attachments:

- A - Equipment Cost
- B - Evaluation of Programming Services
- C - Evaluation of Process Concept
- D - Evaluation of Procurement Documents Preparation
- E - Evaluation of Process Working Drawings



Estimated Production Process Equipment
Costs Furnished by Bureau of the Mint

Costs as of 9/1/74 - Includes items to be purchased, plus relocations from
present Denver Mint.

Main Facility

Scrap Bailer	\$ 300,000
12 Blanking Presses	1,080,000
6 Blank Annealing and Cleaning Lines	925,000
9 Blank Upset Mills	90,000
85 Coining Presses	5,695,000
60 Counting and Bagging Machines	300,000
Analytical Equipment	200,000
Die and Collar Manufacturing	300,000
Miscellaneous (Truck Scale, Forklifts, Battery Chargers, etc.)	700,000
Sub-Total	\$ 9,590,000

Proof Coining Facility

30 Coining Presses	2,010,000
Automatic Packaging Lines	200,000
Miscellaneous	200,000
Sub-Total	\$ 2,410,000

Equipment Total	12,000,000
Installation Costs	2,000,000

GRAND TOTAL \$14,000,000

Technical Evaluation of DMJM-PR Proposal of July 31, 1974

Schedule I

Task 1A - Programming Services for Production Process and Building and Site Facility

1. This task is planned for seven weeks duration (280 hours) in the Project Schedule dated July 1974. Some key personnel of the A/E firm will be involved during a portion of the review period of this activity, therefore, 320 man-hours have been allowed for these personnel.

2. Bureau of the Mint Estimate:

<u>Categories</u>	<u>Man-Hours</u>	<u>Average Rate</u>	<u>Amount</u>	<u>Total</u>
Project Director	80	\$ 34.30	\$ 2,744	
Project Manager	320	34.13	10,922	
Sub-Total	400		\$ 13,666	\$ 13,666

Architectural & Support - Building

Project Architect	320	23.98	7,674	
Arch. Production	240	15.71	3,770	
Estimating	80	23.28	1,862	
Typing	60	11.02	661	
Sub-Total	700		\$ 13,967	\$ 13,967

Engineering - Building

Civil	80	17.74	1,419	
Structural	40	17.74	710	
Sub-Total	120		\$ 2,129	\$ 2,129

Engineering - Mechanical & Electrical

SWANSON RINK	Mech. - HVAC	80	20.58	1,646	
	Mech. - Plumbing	40	17.25	690	
	Electrical	40	18.61	744	
	Sub-Total	160		\$ 3,080	\$ 3,080

Production Process

Process Engineering(2)	640	22.51	14,406	
Process Production	240	14.56	3,494	
Estimating	80	23.28	1,862	
Typing	40	11.02	441	
Sub-Total	1,000		\$ 20,203	\$ 20,203

TOTAL BASIC FEE \$ 53,045

Non-Design Costs~~Travel: Philadelphia - 9 men (3 days):~~

Air Fare - 9 @ \$254.55	-	\$ 2,291
Taxi	-	40
Per diem - 27 man-days @ \$35	-	945

~~San Francisco - 5 men (2 days):~~

Air Fare - 5 @ \$173.28	-	867
Taxi	-	25
Per diem - 10 man-days @ \$35	-	350

Sub-Total	\$ 4,518
-----------	----------

Reproductions

250

~~Sub-Total~~~~\$ 4,768~~

\$ 250.

~~\$ 4,768~~Outside Special Consultant~~Acoustical~~

80 man-hours @ \$22.51	\$ 1,801
------------------------	----------

Typing - 16 @ \$11.02	176
-----------------------	-----

\$ 1,977

Coordination & Profit @ 10%	198
-----------------------------	-----

~~\$ 2,175~~~~\$ 2,175~~TOTAL FEE \$ ~~59,988~~

53,295.

3. Comparison of DMJM-PR and Bureau of the Mint Estimates:

a. Tabular comparison

Categories	DMJM-PR		MINT		Amount Reduction
	Man-Hours	Amount	Man-Hours	Amount	
Project Direction & Management	400	\$ 13,666	400	\$ 13,666	-
Arch. & Support	700	13,967	700	13,967	-
Engineering - Building	200	3,548	120	2,129	1,419
Engineering - Mech & Elec	-	4,400	160	3,080	1,320
Production Process	1,080	21,368	1,000	20,203	1,165
TOTAL BASIC FEE	2,380*	\$56,949	2,380	\$53,045	\$ 3,904

* Mech & Elec not listed by DMJM-PR

Non-Design Costs

Travel	\$ 4,518
--------	----------

\$ 4,518

Reproductions	250
---------------	-----

250

Telephone & Postage	250
---------------------	-----

250

Sub-Total	\$ 5,018
-----------	----------

\$ 4,768

~~\$ 250~~

DMJM-PRMINT

	<u>Man-Hours</u>	<u>Amount</u>	<u>Man-Hours</u>	<u>Amount</u>	<u>Amount Reduction</u>
<u>Acoustical Consultant</u>		\$ 10,450		\$ 2,175	\$ 8,275
TOTAL FEE		\$ 72,417		\$59,988	\$ 12,429

b. Discussion

The A/E's proposal for project direction and management and architectural and support for the building appears to be reasonable and has been agreed to in this evaluation. For Engineering-Building the civil engineer time has been reduced from 160 to 80 man-hours on the basis that this is adequate effort for a civil engineer for this phase of the design effort. Engineering - Mechanical and Electrical has been calculated on the basis of DMJM-PR performing the work directly, rather than through a subcontract. The subcontractor (Swanson & Rink) did not present man-hour figures in their letter to DMJM. The Mint estimate of 80 hours for HVAC, 40 hours for plumbing and 40 hours for electrical, is considered adequate for this programming phase, resulting in an estimate of \$3,080. Production process in the proposal is acceptable, except that the Process Production (Drafting) has been reduced from 320 to 240 man-hours, which provides adequate drafting services during this phase.

Nondesign costs have been reduced by eliminating \$250 for long distance telephone and postage. These are properly overhead and general expense items which would be extremely difficult to account for and charge to each project underway in the firm's offices.

The acoustical consultant costs have been reduced from \$10,450 to \$2,175. The \$2,175 allows for 80 man-hours of acoustical consulting, which should be entirely adequate to examine the problem, outline requirements and prepare a narrative description.

Technical Evaluation of DMJM-PR Proposal of July 31, 1974

Schedule II

Task 1B(1) - Design Concept Services for Production Process

1. This task has an activity duration of 13 weeks (520 hours) in the Project Schedule dated July 1974. Some allowance of A/E time is appropriate during the four weeks Government review period.
2. Bureau of the Mint Estimate:

<u>Categories</u>	<u>Man-Hours</u>	<u>Average Rate</u>	<u>Amount</u>	<u>Total</u>
Project Director	40	\$ 34.30	\$ 1,372	
Project Manager	400	34.13	13,652	
Sub-Total	440		\$15,024	\$ 15,024
<u>Process Engineering & Support</u>				
Process Engineers (3 @ \$560)	1,680	22.51	\$37,817	
Process Designers	2,400	19.84	47,616	
Process Production (2 @ \$560)	1,120	14.56	16,307	
Typing	200	11.02	2,204	
Sub-Total	5,400		\$103,944	\$103,944
SUB-TOTAL				\$118,968
Escalation Factor @ \$0.0462				5,496
TOTAL BASIC FEE				\$124,464

Non-Design Costs

Model

Labor - 360 @ \$15.21 (3 men @ 120)	\$5,476	
Materials	500	
Base	250	
Cover	400	
	\$6,626	\$ 6,626

~~Travel: Canada - 3 men (3 days):~~

Air Fare - 3 @ \$285.52	857	
Taxi	30	
Per diem (9 @ \$35)	315	
	\$1,202	\$ 1,202

Reproductions	350
---------------	-----

~~Value Engineering~~

Workshop (12 men x 40 hours @ \$20)	\$ 9,600	
Task Effort (2% of Basic)	2,489	
Sub-Total	\$20,267	\$ 20,267

TOTAL FEE ~~\$144,731~~
131,440.

3. Comparison of DMJM-PR and Bureau of the Mint Estimates:

a. Tabular comparison

<u>Categories</u>	<u>DMJM-PR</u>		<u>MINT</u>		<u>Amount Reduction</u>
	<u>Man-Hours</u>	<u>Amount</u>	<u>Man-Hours</u>	<u>Amount</u>	
Project Director	40	\$ 1,372	40	\$ 1,372	\$ -
Project Manager	400	13,652	400	13,652	-
Process Engineering & Support	6,600	129,257	5,400	103,944	25,313
Escalation	-	6,666	-	5,496	1,170
Sub-Total		\$150,947		\$124,464	\$ 26,483
<u>Non-Design Costs</u>					
Model		\$ 8,450		\$ 6,626	\$ 1,824
Travel		3,608		1,202	2,406
Reproductions		350		350	-
Telephone & Postage		250		-	250
Value Engineering		16,320		12,089	4,231
Sub-Total		\$ 28,978		\$ 20,267	\$ 8,711
GRAND TOTAL		\$179,925		\$144,731	\$ 35,194

b. Discussion

Project direction and management in the DMJM-PR proposal are considered to be reasonable and have not been changed. Process engineering and support man-hours have been calculated on the following basis:

(1) Three full-time industrial engineers during the 13-week activity period, plus one week during the Government review period.

(2) 2,400 man-hours of process design time consisting of 1,280 hours for materials handling studies, 160 hours on fuel studies and 320 hours each for mechanical, electrical and structural support effort.

(3) Two full-time draftsmen for 13 weeks, plus one week during the Government review period.

The man-hours for the "Block" model have been reduced from 480 to 360. This will allow for three men working for three weeks to

construct the model, which should be adequate. Travel has been reduced by eliminating a visit to the new French Mint. The French Mint is too small to justify the travel costs and details of production processes therein are available from a Bureau of the Mint Report. Value engineering Task Team Effort has been reduced to two percent of the basic direct effort, a figure considered to be appropriate considering expected benefits.

Technical Evaluation of DMJM-PR Proposal of July 31, 1974

Schedule V

Task 1D - Production Process Procurement Documents

1. This task has an activity duration period of six weeks (240 hours). The team that had been working previously on the production process concept would logically perform this function. This team would of necessity have acquired a great amount of information necessary to prepare the procurement documents. There would be some minor adjustments in support personnel for the process team.
2. The prime method of estimating man-hours for this task is on the basis of the number and degree of difficulty of the procurement packages involved. This is as follows:

- a. New and relatively difficult packages requiring considerable survey of equipment availability, manufacturers, and some ingenuity:

Scrap bailer	)	3 packages	
Analytical equipment	)	at 200	
Die manufacturing equipment)		man-hours	600 man-hours

- b. New and relatively simple packages:

Truck scale	)		
Coining bag manufacturing	)	3 packages	
equipment	)	at 100	
Battery chargers & other	)	man-hours	300 man-hours
minor miscellaneous items)			

- c. Review and modify existing Mint Procurement specs - minor effort in survey of availability:

Blanking presses	)		
Anneal & clean lines	)		
Upset mills	)		
Coining presses	)	9 packages	
Count & bag machines	)	at 100	
Forklifts	)	man-hours	900 man-hours
Vibratory burnishers	)		
Automatic proof coin	)		
packaging lines	)		
Minor miscellaneous	)		

- d. The total of 1,800 man-hours for this task covers all functions involved, including specifications drafting, estimating, typing and the minor drafting services that would be required.

3. As an alternative, the following Mint estimate follows the A/E's proposed format and is based on using the essential personnel of the production process team with necessary support personnel for the six weeks period.

<u>Categories</u>	<u>Man-Hours</u>	<u>Average Rate</u>	<u>Amount</u>	<u>Total</u>
Project Director	20	\$ 34.30	\$ 686	
Project Manager	120	34.13	4,096	
Sub-Total	140		\$ 4,782	\$ 4,782

Process Engineering

Process Engineers (3 Ind. @ \$240 each)	720	22.51	\$16,207	
Process Production (Drafting)	120	14.56	1,747	
Mechanical Engineer	240	20.58	4,939	
Electrical Engineer	240	18.61	4,466	
Specifications	240	19.82	4,757	
Estimating	120	23.28	2,794	
Typing	100	11.02	1,102	
Sub-Total	1,780		\$36,012	\$36,012
Sub-Total				\$40,794
Escalation @ \$0.06				2,448
TOTAL BASIC FEE				\$43,242

Non-Design Costs

~~Travel to survey equipment sources:~~

~~5 trips @ 2 men - 3 days:~~

Fare - 10 @ \$200	\$ 2,000
Taxi - 5 @ \$20	100
Per diem - 30 man days @ \$35	1,050
	\$ 3,150 ✓

Reproductions 320

~~Value Engineering (2% of Basic) 865~~

~~Acoustical Consultant @ 5% of Basic \$ 4,335~~

~~TOTAL FEE \$49,739~~

43,562.

4. Comparison of DMJM-PR and Bureau of the Mint Estimates:

a. Tabular comparison

<u>Categories</u>	<u>DMJM-PR</u>		<u>MINT</u>		<u>Amount Reduction</u>
	<u>Man-Hours</u>	<u>Amount</u>	<u>Man-Hours</u>	<u>Amount</u>	
Project Director	20	\$ 686	20	\$ 686	\$ -
Project Manager	240	8,191	120	4,096	4,095
Process Engineering	2,620	49,576	1,780	36,012	13,564
Escalation	-	3,507	-	2,448	1,059
TOTAL BASIC FEE	2,880	\$61,960	1,920	\$43,242	\$18,718
Non-Design Costs		20,170		4,335	15,835
Acoustical Consultant		7,700		2,162	5,538
TOTAL FEE		\$89,830		\$49,739	\$40,091

b. Discussion

The project manager's time for this task has been reduced from 240 to 120 hours. Concurrently with this task, there would be on-going effort to prepare the building design concepts, and the project manager would be involved in both tasks. If the A/E's intent is to have a project manager for the preparation of procurement documents only, this duty could be assigned to the lead industrial engineer, whose full time has been allowed in the fee calculations.

Process engineer time has been reduced from 800 to 720 hours, providing for three full-time industrial engineers during the activity duration. This, if anything, is more than adequate considering the technical support included and the knowledge acquired by these personnel during previous phases of the design effort. Drafting time (process production) has been reduced to 120 man-hours, as only a few sketches will be required for the procurement packages, not Working Drawings as listed in paragraph 1D(3) of the proposed A/E contract. Estimating has been reduced to 120 hours which should provide adequate time to prepare estimates for each of the approximate 15 packages.

Travel has been reduced to five trips for two men at three days each. Trips are needed only for some of the proposed procurements, as most of the detailed information can be obtained by mail and telephone and by personal contact with manufacturers' representatives in Denver and Los Angeles. Value Engineering is calculated at two percent of the direct effort, which should be adequate, particularly considering that the specifications to be prepared are nearly all of the performance type. Finally, acoustical consulting at five percent of the basic effort is reasonable for preparation of procurement documents. The real effort in acoustical consulting will be with respect to sound

absorption enclosures, partitions, floors, walls and ceilings, which is covered in the building design.

Technical Evaluation of DMJM-PR Proposal of July 31, 1974

Schedule VI

Task 1E(1) Production Process Working Drawings

1. This task is planned for a duration of 26 weeks (1,040 hours) in the project schedule dated July 1974 and is a concurrent activity with preparation of final working drawings for the building. The task consists of essentially two parts: (1) drawings for the installation of specific items of production process equipment, and (2) drawings for the installation of materials handling equipment, with appropriate controls for the efficient movement of scrap return, coinage strip, blanks and coins between the various process stations.
2. The estimate for this task has been calculated on the basis of the number of drawings required and the man-hours required per drawing. The estimated number of drawings is:

a. Specific equipment drawings

Approximately 50 drawings required as follows:

Baler - 4; blanking press - 4; anneal and clean lines - 10; upset mills - 3; coin press - 4; count and bag - 3; analytical equipment - 3; die manufacturing equipment - 3; scales - 2; truck scales - 2; bag manufacturing equipment - 2; battery chargers - 2; vibratory burnishers - 2; packaging lines - 2; miscellaneous - 4.

b. Materials handling, automation drawings

Approximately 35 drawings required as follows:

Basic Process Layout

1 - General
1 - Electrical
1 - Mechanical
1 - Materials Flow
1 - Miscellaneous

Materials Handling

1 - General
5 - Cranes & Gantries

Automated Lines

1 - General
2 - Controls
3 - Structural Supports
5 - Assembly Details
5 - Electrical
5 - Mechanical
3 - Miscellaneous

3. Bureau of the Mint Estimate:

<u>Categories</u>	<u>Man-Hours</u>	<u>Average Rate</u>	<u>Amount</u>	<u>Total</u>
Project Director	120	\$ 34.30	\$ 4,116	
Project Manager	520	34.13	17,748	
Sub-Total	640		\$21,864	\$ 21,864

50 drawings @ 125 man-hours per drawing = 6,250 man-hours.

<u>Categories</u>	<u>Man-Hours</u>	<u>Average Rate</u>	<u>Amount</u>	<u>Total</u>
1/3 Process Engineers	2,083	\$ 22.51	\$ 46,888	
1/3 Other Engineers	2,083	19.59	40,806	
1/3 Drafting	<u>2,084</u>	14.56	<u>30,343</u>	
Sub-Total	6,250		\$118,037	\$ 118,037

35 drawings @ 125 man-hours = 4,375 man-hours.

1/3 Process Engineers	1,458	22.51	\$ 32,820	
1/3 Other Engineers	1,458	19.59	28,562	
1/3 Drafting	1,459	14.56	21,243	
Sub-Total	4,375		\$ 82,625	\$ 82,625

Support

Specifications	500	19.82	9,910	
Estimating	300	23.28	6,984	
Typing & Reproduction	<u>1,040</u>	<u>11.02</u>	<u>11,461</u>	
Sub-Total	1,840		\$ 28,355	\$ 28,355

Sub-Total	.\$ 250,881
Escalation @ \$0.124	31,109
TOTAL BASIC FEE	.\$ 281,990

Non-Design Costs

~~Travel to materials handling equipment sources~~

5 trips @ 2 men - 3 days:

~~Fare and taxi - 10 @ \$200~~

~~Per diem - 30 man-days @ \$35~~

\$ 2,000

1,050

~~\$ 3,050~~

Reproductions

1,500

~~Value Engineering @ 2% of Basic~~

5,640.

~~Acoustical Consulting @ 3% of Basic~~

-8-460-

Sub-Total

~~\$18,650~~

\$ ~~18,650~~

TOTAL FEE \$ ~~300,640~~
283,490

4. Comparison of DMJM-PR and Bureau of the Mint Estimates:

a. Tabular comparison

<u>Categories</u>	<u>DMJM</u>		<u>MINT</u>		<u>Amount Reduction</u>
	<u>Man-Hours</u>	<u>Amount</u>	<u>Man-Hours</u>	<u>Amount</u>	
Project Director	120	\$ 4,116	120	\$ 4,116	\$ -
Project Manager	1,040	35,495	520	17,748	17,747
Process Engineering	22,200	398,424	12,465	229,017	169,407
Escalation	-	54,316	-	31,109	23,207
TOTAL BASIC FEE	23,360	\$492,351	13,105	\$281,990	\$210,361
<u>Other Costs</u>					
Travel		\$ 9,150		\$ 3,050	\$ 6,100
Reproductions		1,620		1,500	120
Telephone & Postage		2,500		-	2,500
Value Engineering		13,600		5,640	7,960
Acoustical Consulting		-		8,460	(8,460)
Sub-Total		\$ 26,870		\$ 18,650	\$ 8,220
GRAND TOTAL		\$519,221		\$300,640	\$218,581

b. Discussion

The project manager's time has been reduced from 1,040 to 520 man-hours. Building working drawings will be in preparation concurrently with process working drawings and logically the project manager's effort would be evenly divided between the two activities.

Process engineering has been calculated on a work-requirement basis, rather than a mere listing of man-hours as the A/E did in his proposal. The Mint calculations result in 3,541 man-hours of process engineer (or process design) time, 3,541 man-hours for other engineers and 3,543 man-hours for drafting. These man-hours would allow for a team consisting of 3+ process engineers, 3+ other engineers (1 mechanical, 1 electrical and 1 structural) and 3+ draftsmen working full time during the 26 weeks activity period. This team would be entirely adequate to complete the work required, probably in something like 15 weeks, rather than the 26 allowed. The A/E is grossly overestimating the degree of difficulty of Task 1E(1). The details of installation of the equipment items involved are quite routine and nearly all of the required information to finalize installation drawings will be available from equipment manufacturers detailed submittals. Tying the process stations together with an economical and reliable materials handling system is the only real engineering of consequence required of the A/E in this design phase. Estimating and typing have been reduced slightly.

Travel has been reduced from 30 to 10-man trips. The only travel necessary during this period would be to obtain detailed information regarding materials handling items. Five two-man trips should suffice. Value engineering has been reduced to two percent of the basic costs, and an allowance for acoustical consulting has been added. Acoustical studies and treatments of materials handling systems appear to be warranted.

SCHEDULE II Equipment Costs			
Commission Acoustical	100	2,500	\$ 2,500
SCHEDULE III Building Costs			
Profile Mechanical-electrical	100	26,000	26,000
Landscaping	100	1,000	1,000
Commission Acoustical	100	17,000	17,000
Fireproofing	100	10,000	10,000
SCHEDULE IV Building Utilities			
Profile Mechanical-electrical	100	26,000	26,000
Landscaping	100	1,000	1,000
Commission Acoustical	100	17,000	17,000
Fireproofing	100	10,000	10,000
SCHEDULE V Equipment Costs			
Profile Mechanical-electrical	100	26,000	26,000
Landscaping	100	1,000	1,000
Commission Acoustical	100	17,000	17,000
Fireproofing	100	10,000	10,000

Estimated 10% profit on subcontractors consisting of mechanical, electrical Engineers and Landscape Architect and 10% commission on Special Consultants.

SCHEDULE I Program Services

Profit: Mechanical-electrical	10%	X	3,080	=	\$ 308
Commission: Acoustical	10%	X	3,437	=	\$ 344

SCHEDULE II Equipment Concepts

Commission: Acoustical	10%	X	2,541	=	\$ 254
------------------------	-----	---	-------	---	--------

SCHEDULE III Building Concepts

Profit: Mechanical-electrical	10%	X	36,613	+ 5,800 =	\$4,241
Landscape	10%	X	1,981	=	193
					<u>\$4,439</u>
Commission: Acoustical	10%	X	17,408	=	\$1,741
Firesafety	10%	X	10,053	=	1,005
					<u>\$2,746</u>

SCHEDULE IV Building Tentatives

Profit: Mechanical-electrical	10%	X	54,918	+ 5,800 =	\$6,072
Landscape	10%	X	2,853	=	285
					<u>\$6,357</u>
Commission: Acoustical	10%	X	7,906	=	\$ 791
Firesafety	10%	X	4,745	=	475
					<u>\$1,266</u>

SCHEDULE V Equipment Documents

Profit: None

Commission: Acoustical	10%	X	3,720	=	\$ 372
------------------------	-----	---	-------	---	--------

SCHEDULE VI Equipment Working Drawings

Profit: None

Commission: Acoustical	10%	X	1,242	=	\$ 124
------------------------	-----	---	-------	---	--------

SCHEDULE VII Building Working Drawings

Profit: Mechanical-electrical	10%	X	213,571	=	\$21,357
Landscape Architect	10%	X	5,552	=	<u>555</u>
					\$22,912

Commission: Acoustical	10%	X	5,733	=	\$ 573
Firesafety	10%	X	5,018	=	<u>502</u>
					\$ 1,075

SCHEDULE VIII Building Post Construction Services

Profit: Mechanical-electrical	10%	X	36,620	=	\$3,662
Landscape	10%	X	726	=	<u>73</u>
					\$3,735

Commission: Acoustical	10%	X	4,248	=	\$ 425
Firesafety	10%	X	2,193	=	<u>219</u>
					\$ 644

Project No. N-CO-72-600
New Denver Mint

August 16, 1974

DESIGN FEE EVALUATION FOR MECHANICAL AND ELECTRICAL PORTIONS OF THE WORK

A. Summary of Mechanical and Electrical Engineering Fees per
"Fee and Payment" Schedule:

- Sch. I*
- ~~1. Item 1A, program services for production process and
building and site facility.~~

See F. Rhea's evaluation

Mechanical engineering	40 hours	\$	1,600
Electrical engineering	40 hours	\$	1,600
	Sub Total	\$	3,200

- Sch. III*
2. Item 1B(2), design concept services for
building and site facilities. (diagramatic)

Mechanical engineering	22,473
Electrical Engineering	14,140
Sub Total	\$ 36,613

- Sch. IV*
3. Item 1C, design services for building and
site facilities (tentative).

Mechanical engineering	33,709
Electrical engineering	21,209
Sub Total	\$ 54,918

- Sch. III & IV*
(50% each)
4. Additional requirement of the contract for the
following are in addition to the basic design
costs listed above for this phase:

Life cycle analysis	6,400
Building code requirements	800
Environmental impact	800
Anti-pollution study	2,000
Economic analysis	1,600
Sub Total	\$ 11,600

- Sch. V*
5. Item 1D, production process procurement documents

Mechanical engineering	8,400
Electrical engineering	4,400
Sub Total	\$ 12,800

Sch. VI

6. Item 1E(1), production process installation documents and drawings

DHJN

Mechanical engineering	60,480
Electrical engineering	44,856
Sub Total	\$ 105,330

Sch. VII

7. Item 1E(2), working drawings, building and site facilities

Mechanical engineering	131,090
Electrical engineering	82,481
Sub Total	\$ 213,571

8. Total Mechanical and Electrical Engineering Fees \$ 433,118

B. Basis for Determination of Fees

1. Determination of mechanical and electrical construction costs.

a. Total building and site work	24,000,000
Administrative and support building (150,000 sq. ft. @ 61.00/sq. ft.)	9,100,000
Production facilities building (302,000 sq. ft. @ \$47.00/sq. ft.)	13,500,000
Site work 45.00	1,400,000
b. Administrative and support building:	
Mechanical (PHVAC) Construction cost	
*27% of \$9,100,000 =	2,457,000
Electrical construction cost	
*12.9% of \$9,100,000 =	1,173,900
c. Production facilities construction cost	
Mechanical (PHVAC) construction cost	
*17.3% of \$13,500,000 =	2,335,500
Electrical construction cost	
*14.1% of \$13,500,000 =	1,903,500

*Mechanical and electrical construction costs from "Building Construction Cost Data, 1974, Means."

d. Production equipment cost (labor and material). \$ 14,000,000

(1) Electrical installation costs
(Cost of equipment not included)
**8.9% of \$14,000,000 = 1,246,000

(2) Mechanical installation costs
(Cost of equipment not included)
**12% of \$14,000,000 1,680,000

**Percentage from "Manual of Professional Practice Interprofessional Service Mechanical and Electrical Engineering" Consulting Engineering Council of Colorado.

2. Fee calculations

a. The mechanical engineering design fees are:

(1) Administrative and support building
**4.2% of \$2,457,000 = 103,194

(2) Production facilities
**3.6% of \$2,335,500 = 84,078

(3) Total mechanical engineering construction design fee \$ 187,272

b. The electrical engineering design fees are:

(1) Administrative and support building
**4.2% of \$1,173,900 = 49,304

(2) Production facilities
**3.6% of \$1,903,500 = 68,526

(3) Total electrical engineering construction design fee \$ 117,830

c. Engineering fees for production equipment and installation:

(1) Mechanical engineering fee
**3.6% of \$1,680,000 = 60,480

(2) Electrical engineering fee
**3.6% of \$1,245,000 = 44,856

Sub Total \$ 105,330

Mechanical and electrical fees include all services listed for "Limited Service" as delineated in the CEC "Manual of Professional Practice", plus the itemized additional services listed in Design Fee Evaluation for Mechanical and Electrical Portion of the Work.

Scope includes :

- All electrical work (with no exclusions)
- All PHVAC (including outside and site services)
- Incidental work such as cafeteria
- Incinerators
- Pulpers or shredders
- Industrial horizontal and vertical
- Material only type transportation (does not include elevators)
- Time (man hours) for travel for consultants

Scope does not include:

- Elevators (personnel and freight)
- Power operated loading ramps
- Truck scales
- Travel
 - Transportation fares (costs)
 - Per diem subsistence expense
- Itemized take-off cost estimates

CARL A. SWENSON
Mechanical Engineer

RALPH W. GENOFF
Electrical Engineer

August 23, 1974

Project No. N-CO-72-600
New Denver Mint

ESTIMATED A-E TRAVEL

The estimated travel costs of the Acoustical, Firesafety and Landscape Consultants are included elsewhere in the estimates for each of these consultants. The travel costs for these consultants during the design stage (Program through the Post Construction stage) are to be included in the basic fixed price fee. The on-call travel costs (per diem) and (transportation) of these three consultants during the construction supervision stage will be on the reimbursable basis, as approved, not to exceed an estimated maximum amount as fixed for budget purposes.

Any or all of the usual or normal travel required by the A-E and his electrical-mechanical consultants will be included in the basic fee as part of their normal overhead costs. The special travel, such as trips to other Mints, factories, plants, etc. which will be required by the A-E and his mechanical-electrical consultants during the design stage (Program through the Post Construction stage) will be on the reimbursable basis, as approved, not to exceed an estimated maximum amount as fixed for budget purposes.

The on-call travel costs (per diem and transportation) of the A-E and the mechanical-electrical consultants during the construction supervision stage will be on the reimbursable basis, as approved, not to exceed an estimated maximum amount as fixed for budget purposes.

The reimbursable travel expenses shall be subject to Government travel regulations and limited to the following:

Travel Expense - per diem	\$35.00 per day
Automobile Expense	.15 per mile
Air Travel	Coach Fare
Taxi Fare	Prevailing Commercial Rate

The following travel estimate includes both building(s) and process equipment travel costs. The average trip cost is based on average air fare of \$175.00 and average taxi fare of \$25.00 or \$200.00 per trip for transportation.

Schedule I Program Services Building and Production Equipment

	<u>Trips</u>	<u>Man-days</u>
Travel 9 men Philadelphia 3 days	9	27
Visit metal plants, 4 men, 3 days	4	12
Final coordination 2 men, 3 days	2	6
	<u>15</u>	<u>45</u>

Fare 15 trips @ 200 =	\$3,000
Per Diem = 45 man-days @ \$35 =	<u>1,575</u>
	\$4,575

Say \$4,500

Schedule II Design Concept - Process Equipment

	<u>Trips</u>	<u>Man-days</u>
Visit Canadian Mint		
Process Engineers, 2 men, 4 days	2	8
Mechanical, 2 men, 4 days	2	8
Electrical, 2 men, 4 days	2	8
Visit metal plants, 4 men, 3 days	4	12
	<u>10</u>	<u>36</u>

Fare 10 trips @ \$200 =	\$2,000
Per Diem 36 man-days @ \$35 =	<u>1,260</u>
	\$3,260

Say \$3,300

Schedule III Building Design Concept Stage

	<u>Trips</u>	<u>Man-days</u>
Management, 2 men, 3 days	2	6
Architecture, 2 men, 3 days	2	6
Mechanical, 2 men, 3 days	2	6
Electrical, 2 men, 3 days	2	6
Spec. Problem, 4 men, 3 days	4	12
	<u>12</u>	<u>36</u>

Fare 12 trips @ \$200 =	\$2,400
Per Diem 36 man-days @ \$35 =	<u>1,260</u>
	\$3,660

Say \$3,700

Schedule IV Building Tentative Design

	<u>Trips</u>	<u>Man-days</u>
Management, 4 men, 4 days	4	16
Architecture, 2 men, 3 days	2	6
Mechanical, 4 men, 3 days	4	12
Electrical, 2 men, 3 days	2	6
Special Problem, 8 men, 3 days	8	24
	<u>20</u>	<u>64</u>

Fare 20 trips @ \$200 =

\$4,000

Per Diem 64 @ \$35 =

2,240

\$6,240

Say \$6,300

Schedule V Process Equipment - Procurement Documents

	<u>Trips</u>	<u>Man-days</u>
Management (included in Building)	None	None
Process Engineers, 2 men, 4 trips, 3 days	8	24
Mechanical, 2 men, 3 days	2	6
Electrical, 2 men, 3 days	2	6
	<u>12</u>	<u>36</u>

Fare 12 trips @ \$200 =

\$2,400

Per Diem 36 man-days @ \$35 =

1,260

\$3,660

Say \$3,700

Schedule VI - Process Equipment Working Drawings

	<u>Trips</u>	<u>Man-days</u>
Management (included in building)	None	None
Process Engineers, 2 men, 2 trips, 3 days	4	12
Mechanical, 2 men, 2 trips, 3 days	4	12
Electrical, 2 men, 2 trips, 3 days	4	12
	<u>12</u>	<u>36</u>

Fare 12 trips @ \$200 =

\$2,400

Per Diem 36 man-days @ \$35 =

1,260

\$3,660

Say \$3,700

Schedule VII Building Working Drawings

	<u>Trips</u>	<u>Man-days</u>
Management, 2 men, 2 trips, 2 days	4	8
Architecture, 2 men, 2 trips, 3 days	4	12
Mechanical, 2 men, 1 trip, 3 days	2	6
Electrical, 2 men, 1 trip, 3 days	2	6
Special Problem, 4 men, 1 trip, 3 days	4	12
	<u>16</u>	<u>44</u>

Fare 16 trips @ \$200 =

\$3,200

Per Diam 44 days @ \$35 =

1,540

\$4,740

Say \$4,800

Schedule VIII Building Post Construction

	<u>Trips</u>	<u>Man-days</u>
Management, 2 men, 2 trips, 3 days	4	12
Architecture, Mechanical, Electrical 3 men, 1 trip, 3 days	3	9
Special Problem, 2 men, 1 trip, 3 days	2	6
	<u>9</u>	<u>27</u>

Fare 9 trips @ \$200 =

\$1,800

Per Diam 27 man-days @ \$35 =

945

\$2,745

Say \$2,700

Schedule IX Process Equipment - Post Construction

	<u>Trips</u>	<u>Man-days</u>
Management (included in building)	None	None
Process Engineers, 2 men, 1 trip, 3 days	2	6
Mechanical 1 man, 1 trip, 3 days	1	3
Electrical 1 man, 1 trip, 3 days	1	3
	<u>4</u>	<u>12</u>

Fare 4 trips @ \$200 =

\$ 800

Per Diem 12 man-days @ \$35 =

420

\$1,220

Say \$1,200

L-11

SUMMARY OF ESTIMATED TRAVEL COSTS

	Proposed by A-E	GSA Estimate	Difference
Schedule I Program Services	\$ 4,518	\$ 4,500	+ 18
Schedule II Equipment Concepts	3,608	3,300	+ 308
Schedule III Building Concepts	3,608	3,700	- 92
Schedule IV Building Tentatives	None	6,300	- 6,300
Schedule V Equipment Procurement Documents	6,100	3,700	+ 2,400
Schedule VI Equipment Working Drawings	9,150	3,700	+ 5,450
Schedule VII Building Working Drawings	1,525	4,800	- 3,275
Schedule VIII Building Post- Construction Service	None	2,700	- 2,700
Schedule IX Equipment Post- Construction Service	4,050	1,200	+ 2,850
Schedule X		1,000	
	<u>\$32,559</u>	<u>\$33,900</u>	<u>-\$1,341</u>
		34,900.	

ACOUSTICAL CONSULTANT ESTIMATE

August 13, 1974

Estimated Acoustical Consultant Hourly Rate

	Base Rate	20% Fringe	100% Overhead	Sub Total	10% Fee	Average Rate
Chief Consultant	15.00	3.00	15.00	33.00	3.30	\$36.30
Staff Consultant	10.00	2.00	10.00	22.00	2.20	<u>\$24.20</u>
$36.30 + 24.20 \div 2 =$ Use average rate of						\$30.25
Typing-clerical	6.00	1.20	6.00	13.20	1.32	\$14.50

August 13, 1974

Schedule I, Programming Services

Proposal fee: \$9,500

Estimated fee:

Study criteria	20 hours		
On-site investigation	20 hours		
Research	24 hours		
Report	16 hours		
	<u>80 hours</u>	@ \$30.25 =	\$2,420
Typing	16 hours	@ \$14.50 =	232
Travel			
Air fare 1 man 2 trips @ \$175	=	\$350	
Taxi 2 trips @ 20	=	40	
Per diem 7 man-days @ 35	=	245	
		<u>\$635</u>	= 635
Printing	\$ 50		
Long distance telephone	<u>100</u>		
	\$150	=	\$ 150
	Est. Total		<u>\$3,437</u>

Schedule II, Equipment Concepts

Proposed Fee: None

Estimated Fee:

Review exterior layout	16 hours	
Review equipment layout	20 hours	
Research	12 hours	
Report	16 hours	
	<u>64</u> hours @ \$30.25 =	\$1,936
Typing and clerical	10 hours @ \$14.50 =	145
Travel		
Air fare 1 man 1 trip @ \$175 =	\$175	
Taxi 1 trip @ 20 =	20	
Per Diem 4 days @ 35 =	140	
	<u>\$335</u> =	\$ 335
Printing	\$ 50	
Long distance telephone	<u>75</u>	
	\$125 =	\$ 125
	Total	\$2,541

Schedule III Building Concepts

Proposed Fee \$42,500

Estimated fee:

Review site plan	30 hours
Review mechanical-electrical equipment and layout	100 hours
Review architectural layout	80 hours
Review materials	80 hours
Research	100 hours
Report	80 hours

470 hours @ \$30.25 =

\$14,218

Typing and clerical

120 hours @ \$14.50 =

1,740

Travel

Air fare 2 men 2 trips @ \$175 = \$ 700

Taxi 4 trips @ 20 = 80

Per diem 4 trips @ 3 days

@ 35 = 420
\$1,200 =

\$ 1,200

Printing

\$100

Long distance telephone

150
\$250 =

\$ 250

Total

\$17,408

Schedule IV, Building Tentatives

Proposed Fee: \$8,500

Estimated Fee:

Review for compliance with program	32 hours		
Review mechanical-electrical equipment layouts	24 hours		
Analysis critical areas	20 hours		
Review architectural layout	24 hours		
Prepare contract documents	100 hours		
Report	24 hours		
	<u>224</u> hours @ \$30.25 =		\$6,776
Typing and clerical	40 hours @ \$14.50 =		580
Travel			
Air fare 1 man 1 trip @	\$175		
Taxi 1 trip @	20		
Per diem 3 days @ 35 =	<u>105</u>		
	\$300 =		\$ 300
Printing	\$150		
Long distance telephone	<u>100</u>		
	\$250 =		\$ 250
	Total		\$7,906

Schedule V, Equipment Procurement Documents

Proposed Fee: \$7,000

Estimated Fee:

Review Equipment Procurement Documents (partial submittals)	80 hours		
Revise equipment procurement documents	24 hours		
Report	<u>8</u> hours		
	112 hours @ \$30.25 =		\$3,388
Typing and clerical	16 hours @ \$14.50 =		232
Travel			
- None			
Printing	\$ 50		
Long distance telephone	<u>50</u>		
	\$100 =		\$ 100
			=====
	Total		\$3,720.

Schedule VI, Equipment Working Drawings

Proposed Fee: None

Estimated Fee:

Review Equipment Working Drawings	16 hours		
Research changes	8 hours		
Report	8 hours		
	<u>32</u> hours @ \$30.25	=	\$ 968
Typing and clerical	12 hours @ \$14.50	=	174
Travel			
None			
Printing	\$ 50		
Long distance telephone	<u>50</u>		
	\$100	=	\$ 100
	Total		\$1,242

Schedule VII Building Working Drawings

Proposed Fee \$6,500

Review building Working Drawings 100 hours
(partial submittals)

Research changes 40

Report 30

170 hours @ \$30.25 = \$5,143

Typing and clerical

20 hours @ \$14.50 = 290

Travel

Air Fare 1 trip @ \$175 = \$175

Taxi 1 trip @ 20 = 20

Per diem 3 days @ 35 = 105

\$300 =

\$ 300

\$5,733

Schedule VIII, Post Construction Services (Building Shop Drawings)

Proposed Fee: \$6,000

Estimated Fee:

Review shop drawings	100 hours		
Witness factory tests	16 hours		
Report	8 hours		
	<u>124</u> hours @ \$30.25	=	\$3,751
Typing and clerical	16 hours @ \$14.50	=	232
Travel			
Air fare 1 trip @ \$175	=	\$175	
Taxi 1 trip @ 20	=	20	
Per diem 2 days @ 35	=	70	
	<u>\$265</u>	=	\$ 265
	Total		\$4,248

Schedule IX, Post Construction Services (Equipment Shop Drawings)

Proposed Fee: None

Estimated Fee: None

Summary of Acoustical Consultant Fees

	Proposed by A-E	GSA Estimate	D11
Schedule I Program Services	\$ 9,500	\$ 3,437	+ 6
Schedule II Equipment Concepts	None	2,541	- 2
Schedule III Building Concepts	42,500	17,408	+25
Schedule IV Building Tentatives	8,500	7,906	+
Schedule V Equipment Procurement Documents	7,000	3,720	+ 3
Schedule VI Equipment Working Drawings	None	1,242	- 1
Schedule VII Building Working Drawings	6,500	5,733	+
Schedule VIII Building Post- Construction	6,000	4,248	+ 1,
Schedule IX Equipment Post- Construction	None	None	
Schedule X Construction Services	15,000	8,350	+ 6,
	\$95,000	\$54,585	\$40,
			or 7 high

Project No. N-CO-72-600
New Denver Mint

VE REQUIREMENTS AND BASIC CONSIDERATIONS FOR THE NEW DENVER MINT

1. Special VE type services are required of the A-E. See Chapter 7 of PBS P 8000.1.
2. A-E's VE fee may be deleted from the statutory 6% limitation except directly related production work.
3. A-E cannot participate in incentive sharing.
4. The VE pamphlet titled, "Design for Value" states, "Direct compensation will not be allowed for personnel attending executive seminars or workshops. This expense is properly accounted for as overhead." This policy of disallowing proposed manhours for VE workshop will be followed during this negotiation; however, it appears FPR Part 1-15.205-42(f)(3), Contract Cost Principles and Procedures, allows payment to the A-E for straight-time compensation employee training time which will benefit the project.
5. No special travel and per diem costs are anticipated in connection with VE. Any travel, reproduction and clerical costs required in connection with VE work is included in the costs of the basic fee. Value Engineering (VE) terminology is changed to Value Management (VM); however, the meaning is the same.
6. Swanson and Rink, Associates included \$14,000 for VE in their proposal, which the A-E apparently took out and included in his VE proposal fee. This was the only consultant which included VE services in their proposal and it is agreed it is appropriate for them to do so.
7. The following formula has been furnished by the Central Office. Value Engineering staff as a general guide for the cost of VE implementation.

Anticipated savings = 10% of construction costs
VE service costs = 5% of the savings

24 million plus 14 million = 38 million X 10% X 5% =
estimated VE service cost = \$19,000.

It is estimated this cost would be divided equally between the A-E, CM and the Government on 40-40-20 ratio respectively. Therefore, a rough estimate of the A-E's VE services is \$190,000 X 40% = \$76,000.

8. The following cost estimate covers all VE services to be furnished by the A-E including the building(s) and process equipment.

Estimated VE Engineers and Architects Hourly Rate

	Base Rate	20% Fringe	100% Overhead	Sub Total	10% Fee	Average Rate
Architectural	9.00	1.80	9.00	19.80	1.98	21.78
Engineering	8.50	1.70	8.50	18.70	1.87	20.57
Estimating	9.00	1.80	9.00	19.80	1.98	21.78

Average rate for above, use $\$64.13 \div 3 = 21.38$
Use \$21.00/hour

Process Engineer	10.00	2.00	10.00	22.00	2.20	24.20
------------------	-------	------	-------	-------	------	-------

Use \$24/hour

Schedule I Programming Services

Review and comment on design criteria, no extra fee justified as Program Service is primarily criteria evaluation from a Value Engineering standpoint.

Fee Proposed: none

Estimated Fee: none

Schedule II Equipment Concepts

Examine all design criteria, consider alternates and submit report. Part of this service is a continuation of of program VE services above, therefore, some of the normal work required at this stage has already been accomplished and covered by estimated costs.

Process Engineers 2 men @ 100 hours = 200 @ \$24.00 = \$4,800.

Proposed Fee: \$6,560

Estimated Fee: \$4,800

Schedule III Building Concepts

Examine all design criteria, consider alternates and submit report. Part of this service is a continuation of the Program VE services above, therefore, some of the usual work required at this stage has already been accomplished and covered by estimated costs.

Engineers and Architects:	7 men @ 40 hours	=	280 hours @ \$21.00	=	\$5,880
Estimators:	2 men @ 60 hours	=	120 hours @ \$21.00	=	<u>2,520</u>
					\$8,400

Proposed Fee: \$11,520
 Estimated Fee: \$ 8,400

Schedule IV Building Tentatives

A-E's staff shall attend 40-hour VE Work Shop hosted by CM. Estimated attendance by A-E - 14 people. Also provide data and assist CM in preparing VE Workshop Workbook. Review and confirm concept VE suggestions are incorporated in contract documents.

Engineers and Architects:	7 men @ 60 hours	=	420 hours @ \$21.00	=	\$ 8,820
Estimators:	2 men @ 100 hours	=	200 hours @ \$21.00	=	4,200
Data, Workbook, etc.					<u>1,000</u>
					\$14,020

Proposed Fee: \$19,600
 Estimated Fee: \$14,020

40-hour Workshop

Proposed Fee: \$10,400
 Estimated Fee: None

Schedule V Equipment Procurement Documents

Review and confirm concept VE services are incorporated in contract documents.

Process Engineers: 4 men @ 60 hours = 240 hours @ \$24.00 = \$57.60

Proposed Fee: \$13,120
 Estimated Fee: \$ 5,760

Schedule VI Equipment Working Drawings

A-E is to utilize those men trained in VE Workshop as a team to review design effort.

Process Engineers: 4 men @ 64 hours = 256 hours @ \$24.00 = \$6,144

Proposed Fee: \$9,840
 Estimated Fee: \$6,144

Schedule VII Building Working Drawings

A-E is to utilize those men trained in VE Workshop as a team to review design effort.

Engineers and

Architects:	8 men @ 48 hours	=	384 @ \$21.00	=	\$8,064
Estimators:	1 man @ 160 hours	=	@ \$21.00	=	<u>3,360</u>
					\$11,424

Proposed Fee: \$10,500

Estimated Fee: \$11,424

Schedule VIII Building Post Services

A-E's prime VE responsibility is to review and comment on VECP's submitted by the contractor, (after initial screening by the Government). If additional design is required by acceptance of VECP, the A-E's fee is subject to change by Clause 3.

Engineers and

Architects:	6 men @ 40 hours	=	240 hours @ \$21.00	=	\$5,040
Estimators:	1 man @ 40 hours	=	@ \$21.00	=	<u>840</u>
					\$5,840

Proposed Fee: \$7,000

Estimated Fee: \$5,840

Schedule IX Equipment Post Services

A-E is to review and comment on VECP's submitted by the contractor, (after initial screening by the Government.) If additional design is required by acceptance of VECP, A-E's fee is subject to change by Clause 3.

Process Engineer: 2 men @ 60 hours = 120 hours @ \$24.00 = \$2,880

Proposed Fee: \$7,000

Estimated Fee: \$2,880

Schedule X Construction Supervision

Proposed Fee: None

Estimated Fee: Included in the estimated manhours of the appropriate consultants during the construction supervision stage. (Assume 10 VE proposals of those received would require review by the A-E with each proposal requiring 16 hours review time. Therefore:
 $10 \times 16 \text{ hours} = 160 \text{ hours} @ \$21.00 = \$33,60$).

Summary of VE Services Costs

	Proposed by A-E	GSA Estimate	Difference
Schedule I, Programming Service	None	None	
Schedule II Equipment Concepts	\$ 6,560	\$ 4,800	+ 1,760
Schedule III Building Concepts	11,520	8,400	+ 3,120
Schedule IV Building Tentatives	30,000*	14,020	+ 15,980
Schedule V Equipment Procurement Documents	13,120	5,760	+ 7,360
Schedule VI Equipment Working Drawings	9,840	6,144	+ 3,696
Schedule VII Building Working Drawings	10,500	11,424	- 924
Schedule VIII Building Post	7,000	5,840	+ 1,160
Schedule IX Equipment Post Construction	6,560	2,880	+ 4,120
Schedule X			
	\$95,100	\$59,263	\$36,272

*Includes \$10,400 for workshop.

Schedule X Construction Supervision

Proposed Fee: None

Estimated Fee: Included in the estimated manhours of the appropriate consultants during the construction supervision stage. (Assume 10 VE proposals of those received would require review by the A-E with each proposal requiring 16 hours review time. Therefore:
 $10 \times 16 \text{ hours} = 160 \text{ hours} @ \$21.00 = \$33,60$).

Summary of VE Services Costs

	Proposed by A-E	GSA Estimate	Difference
Schedule I, Programming Service	None	None	
Schedule II Equipment Concepts	\$ 6,560	\$ 4,800	+ 1,760
Schedule III Building Concepts	11,520	8,400	+ 3,120
Schedule IV Building Tentatives	30,000*	14,020	+ 15,980
Schedule V Equipment Procurement Documents	13,120	5,760	+ 7,360
Schedule VI Equipment Working Drawings	9,840	6,144	+ 3,696
Schedule VII Building Working Drawings	10,500	11,424	- 924
Schedule VIII Building Post	7,000	5,840	+ 1,160
Schedule IX Equipment Post Construction	6,560	2,880	+ 4,120
Schedule X			
	\$95,100	\$59,268	\$36,272

*Includes \$10,400 for workshop.

8-13-74

FIRESAFETY CONSULTANT ESTIMATE

Estimated Firesafety Consultant Hourly Rate

	Base Rate	20% Fringe	200% Overhead	Sub Total	10% Fee	Average Rate
Chief Consultant	9.50	1.90	9.50	10.90	2.09	22.99
Staff Consultant	8.00	1.60	8.00	17.60	1.76	19.36
$22.99 + 19.36 \div 2 = \text{Average Consultant Rate of } \21.18						
Clerical	5.00	1.00	5.00	11.00	1.10	12.10

SCHEDULE I Program Services

Proposed Fee: None

Estimated Fee: None

Schedule II Equipment Concepts

Proposed Fee: None

Estimated Fee: None

Schedule III Building Concepts

Proposed Fee: \$10,590.25

Estimated Fee:

Review criteria	60 hours		
Preliminary meetings	40 hours		
Survey existing Phil Mint	30 hours		
Develop goal oriented system	40 hours		
Research	60 hours		
Basic design input	60 hours		
Report	40 hours		
	<u>330</u> hours @ \$21.00 =		\$ 6,930
Clerical	80 hours @ \$12.10 =		968
Travel			
Air fare 2 men, 3 trips @ \$200 =	\$1,200		
Taxi 6 trips @ 25 =	150		
Per diem 18 days @ 35 =	<u>630</u>		
	\$1,980 =		1,980
Reproduction			75
Long distance telephone			100
		Total	<u>\$10,053</u>

Schedule IV Building Tentatives

Proposed Fee: \$5,176.41

Estimated Fee:

Review Systems	40 hours	
Research	20	
Basic design input	80	
Report	<u>24</u>	
	164 hours @ \$21.00	\$3,444

Clerical	30 hours @ \$12.10	361
----------	--------------------	-----

Travel

Air fare 2 men, 1 trip @ \$200	=	\$400	
Taxi 2 trips @ 20	=	40	
Per diem 10 days @ 35	=	<u>350</u>	
		\$790	=
			790

Reproduction

Long distance telephone		50
		<u>100</u>

Total	\$4,745
-------	---------

Schedule V Equipment Procurement Documents

Proposed Fee: None

Estimated Fee: None

Schedule VI Equipment Working Drawings

Proposed Fee: None

Estimated Fee: None

Schedule VII Building Working Drawings

Proposed Fee: \$4,219.60

Estimated Fee:

Review previous corrections 24 hours

Basic design input 60

Prepare bidding documents 40

Report 24

148 hours @ \$21.00 = \$3,108

Clerical 30 hours @ \$12.10 360

Travel

Air fare 2 men 2 trips @ \$200 = \$800

Taxi 4 trips @ 20 = 80

Per diem 12 days @ 35 = 420

\$1,300 = 1,300

Reproduction

150

Long distance telephone

100

Total \$5,018

Schedule VIII Post Construction Building O & M Manuals

Proposed Fee: \$6,112.82

Estimated Fee:

Firesafety consultant not involved in shop drawing review

Prepare O&M Manual(s)	80 hours @ \$21.00 =	\$1,680
-----------------------	----------------------	---------

Clerical	30 hours @ \$12.10 =	363
----------	----------------------	-----

Reproduction		<u>150</u>
--------------	--	------------

Total		\$2,193
-------	--	---------

Schedule IX Post Construction - Equipment Shop Drawings

Proposed Fee: None

Estimated Fee: None

Schedule X Construction Supervision

Proposed Hourly Rate \$35.19/hour + costs

Proposed Maximum man hours

Estimated Hourly Rate:

\$21.00 plus 50% (due to limited duration) = \$31.50

Average trip cost

air fare \$200

taxi 20

Per diem 70

\$290

Estimated Maximum man hours 160 hours

Salary 160 @ \$31.50 = \$5,040

Expenses 5 @ \$290 = 1,450

\$6,490

FIRESAFETY CONSULTANT ESTIMATE SUMMARY

	A-E Proposed	GSA Estimate	Difference
Schedule I	None	None	
Schedule II	None	None	
Schedule III	\$10,590.05	\$10,053.	+ 537
Schedule IV	5,176.41	4,745	+ 431
Schedule V	None	None	
Schedule VI	None	None	
Schedule VII	4,219.60	5,018	- 799
Schedule VIII	6,112.82	2,193	+3,919
Schedule IX	None	None	
Schedule X <u>164</u> hours @ \$35.19 + cost =		6,490	

LANDSCAPE CONSULTANT ESTIMATE

Estimated Landscape Architect hourly rate

	Base Rate	20% Fringe	100% Overhead	Sub. Total	10% Fee	Average Rate
Landscape Architect	11.00	2.20	11.00	24.20	2.42	26.62
Landscape Designer-Draftsman	6.50	1.30	6.50	14.30	1.43	15.73

Average Design Rate = $\$26.62 + 15.73 + 2 = 21.18$
 Use \$21.00/hour

Clerical	5.00	1.00	5.00	11.00	1.10	12 10
----------	------	------	------	-------	------	-------

SCHEDULE I Programming Services

Proposed Fee: None
Estimates Fee: None

SCHEDULE II Equipment Concepts

Proposed Fee: None
Estimated Fee: None

SCHEDULE III Building Concepts

Proposed Fee: \$1,495

Estimated Fee:

Project Review	20 hours @ 21.00	=	420
Preliminary planning	40 hours @ 26.62	=	1,065
Layout drawings	16 hours @ 15.73	=	252
Clerical	16 hours @ 12.10	=	194
			<u>\$1,931</u>

No travel
Reproduction

Total	<u>50</u>
	<u>\$1,981</u>

SCHEDULE IV Building Tentatives

Proposed Fee: \$3,522

Estimated Fee:

Preliminary planning	24 hours @ 26.62 =	\$ 639
Research	32 hours @ 21.18 =	678
Layout drawing	60 hours @ 15.73 =	944
Estimating	16 hours @ 15.73 =	252
Clerical	24 hours @ 12.10 =	290
		<u>\$2,803</u>

Travel : None

Reproduction

~~xxxxxx~~

Total

~~xxxxxx~~

50
\$2,853

SCHEDULE V Equipment Procurement Documents

Proposed Fee: None

Estimated Fee: None

SCHEDULE VI Equipment Working Drawings

Proposed Fee: None

Estimated Fee: None

SCHEDULE VII Building Working Drawings

Proposed Fee: \$5,600

Estimated Fee:

Design	80 hours @ 26.62 =	\$2,130
Research	20 hours @ 21.18 =	424
Layout Drawing	80 hours @ 15.73 =	1,258
Specification	32 hours @ 15.73 =	503
Estimating	16 hours @ 15.73 =	252
Consulting	16 hours @ 26.62 =	426
Clerical	40 hours @ 12.10 =	484
		<u>\$5,477</u>

Travel

None

Reproduction

Total

75
\$5,552

SCHEDULE VIII

Bldg
Post Construction Services, Shop Drawings

Proposed Fee: \$1,500

Estimated Fee:

Review shop drawings
Clerical

40 hours @ 15.73 =
8 hours @ 12.10 =

629
97

Total

\$726

SCHEDULE IX Equipment Post Construction

Proposed Fee: None

Estimated Fee: None

SCHEDULE X Building Post Construction

Proposed Fee: 100 hours @ \$27.09 = \$2,709

Estimated Fee: 100 hours @ \$26.62 = \$2,662

Travel to Chicago Area

$$\$ 250. + 3 \times \$ 35. = 250 + 105 =$$

$\frac{355}{\$ 3,017.}$

Summary of Landscape Architect Consultant Fees

	Proposed by A-E	GSA Estimate	Difference
Schedule I Program Services	None	None	
Schedule II Equipment Concepts	None	None	
Schedule III Building Concepts	1,495	1,981	- 486
Schedule IV Building Tentatives	3,522	2,853	+ 669
Schedule V Equipment Procurement Documents	None	None	
Schedule VI Equipment Working Drawings	None	None	
Schedule VII Building Working Drawings	5,600	5,552	+ 48
Schedule VIII Building Post Construction	1,500	726	
Schedule IX Equipment Post Construction			
Schedule X Construction Services			

050
August 23, 1974

ESTIMATED CONSTRUCTION SUPERVISION SERVICES

Schedule X

The Construction Supervision Consulting Services furnished by the A-E shall be on a on-call basis as requested by the Contracting Officer, at the rates agreed to during negotiation.

Any travel which may be required during this stage is included in this estimate elsewhere, except for the Acoustical and Firesafety Consultants.

Monthly Visit and Report by Principal

Principal $1\frac{1}{2}$ days per month	
12 hours @ \$35.00 =	\$420
Clerical 1 hours @ \$12.00 =	12
Travel - Miscellaneous	25
	<u>\$457</u>
Escalation 6%/year = $2\frac{1}{2}$ X .06 X	
457 =	69
	<u>\$526</u>

For 24 months = 24 X \$526 = \$12,624

Estimated Consulting Rates and Manhours

15% has been added to the following consultant rates (except the special consultants) to provide for 6% annual escalation rate for a $2\frac{1}{2}$ year period (midway through the construction period).

Principal 200 hours @ \$35 +15% or 40.25 =	\$ 8,050
Project Architect 832 hours @ 23.93 +15% or 27.58 =	\$22,947
Structural Engineer 832 hours @ 17.74 +15% or 20.40 =	\$16,973
Electrical Engineer 832 hours @ 18.61 +15% or 21.40 =	\$17,805
Landscape Architect 240 hours @ 26.62 =	\$ 6,389
Civil Engineer 600 hours @ 17.74 +15% or 20.40 =	\$12,240
Mechanical Engineer 832 hours @ 18.92 +15% or 21.76 =	\$18,104

Acoustical Consultant 200 hours @ \$30.25	=	\$6,050
Travel 1 man 8 trips @ \$200	=	1,600
Per diem 20 man-days @ \$35	=	700
		<u>\$8,350</u>

Firesafety Consultant 200 hours @ \$23.00	=	\$4,600
Travel 1 man 6 trips @ \$200	=	1,200
Per diem 20 man-days @ \$35	=	700
		<u>\$6,500</u>

Sub Total	\$117,358	<u>\$117,358</u>
-----------	-----------	------------------

Estimated Maximum Construction Services Fee		<u>\$129,982</u>
---	--	------------------

Revised 9-12-74

FIRESAFETY CONSULTANT ESTIMATE SUMMARY

	A-E Proposed	GSA Estimate	Difference
Schedule I	None	None	
Schedule II	None	None	
Schedule III	\$10,590.05	\$8,425.00	+ \$2,165
Schedule IV	5,176.41	4,384	+ 792
Schedule V	None	None	
Schedule VI	None	None	
Schedule VII	4,219.60	4,658	- 439
Schedule VIII	6,112.82	1,830	+ 4,282
Schedule IX	None	None	
Schedule X 160 hours @ \$35.19 + cost =		6,490	

SCHEDULE I Program Services

Proposed Fee: None

Estimate Fee: None

SCHEDULE II Equipment Concepts

Proposed Fee: None

Estimated Fee: None

SCHEDULE III Building Concepts

Proposed Fee: \$10,590.25

Estimated Fee:

Review Criteria:	Principal	20 hours
	Proj. Adm.	20
	Proj. Engr.	20

Preliminary Meetings:		
	Proj. Adm.	20
	Proj. Engr.	20

Survey Philadelphia Mint:		
	Proj. Engr.	30

Develop goal oriented system:		
	Proj. Engr.	40

Research:	Proj. Engr.	30
	Engr.	30

Basic design input:		
	Proj. Engr.	30
	Engr.	30

Report:	Proj. Engr.	40
---------	-------------	----

330 hours @ \$21.00 =	\$6,930
-----------------------	---------

Clerical: None, included in overhead

Travel

Air fare 2 men, 2 trips @ \$200 = \$ 800

Taxi 4 trips @ 25 = 100

Per diem 12 days @ 35 = 420

\$1,320

\$1,320

Reproduction

75

Long distance telephone

100

Total

\$8,425

SCHEDULE IV Building Tentatives

Proposed Fee: \$5,176.41

Estimated Fee:

Review Systems:	Principal	10 hours	
	Proj. Adm.	10	
	Proj. Engr.	20	
Research:	Proj. Engr.	10	
	Engr.	10	
Basic Design			
Input:	Proj. Engr.	40	
	Engr.	40	
Report:	Proj. Engr.	24	
		<u>164</u> hours @ \$21.00 =	\$3,444

Clerical: None, included in overhead

Travel

Air fare 2 men, 1 trip @ \$200	=	\$400	
Taxi 2 trips @ 20	=	40	
Per diem 10 days @ 35	=	<u>350</u>	
		\$790 =	790

Reproduction

Long distance telephone

	50
	<u>100</u>

Total	\$4,384
-------	---------

Revised 9-12-74

SCHEDULE V Equipment Procurement Documents

Proposed Fee: None
Estimated Fee: None

SCHEDULE VI Equipment Working Drawings

Proposed Fee: None
Estimated Fee: None

SCHEDULE VII Building Working Drawings

Proposed Fee: \$4,219.60

Estimated Fee:

Review previous corrections:	Principal	8 hours
	Proj. Adm.	8
	Proj. Engr.	8
Basic design input:	Proj. Engr.	30
	Engr.	30
Prepare bid documents:	Proj. Engr.	20
	Engr.	20
Report:	Proj. Engr.	24
		<u>148</u> hours @ \$21.00 = \$3,108

Clerical: None, included in overhead

Travel

Air Fare 2 men 2 trips @ \$200 = \$800

Taxi 4 trips @ 20 = 80

Per diem 12 days @ 35 = 420

\$1,300 =

\$1,300

Reproduction

Long distance telephone

150

100

Total

\$4,658

Revised 9-12-74

SCHEDULE VIII Post Construction Building O & M Manuals

Proposed Fee: \$6,122.82

Estimated Fee:

Firesafety consultant not involved in shop drawing review

Prepare O&M Manual(s): Proj. Engr. 80 hours @ \$21.00 = \$1,680

Clerical: None, included in overhead

Reproduction

150

Total

\$1,830

Ad 11

Revised 9-13-74

Project No. N-CO-72-600
New Denver Mint

7

DESIGN FEE EVALUATION FOR MECHANICAL AND ELECTRICAL PORTIONS OF THE WORK

	<u>Manhours</u>	<u>Rate</u>	<u>Amount</u>
SCHEDULE I			
Item 1A			
Mechanical (HVAC) Eng.	60	20.58	\$1,240
Mechanical (Plumbing) Eng.	45	17.25	780
Electrical Engr.	60	18.61	<u>1,120</u>
Subtotal			\$3,140
SCHEDULE III			
Item 1B-2			
Mechanical (HVAC) Engr.	700	20.58	14,410
Mechanical (Plumbing) Engr.	530	17.25	9,140
Electrical Engr.	690	18.61	<u>12,840</u>
Subtotal			\$36,390
SCHEDULE IV			
Item 1C			
Mechanical (HVAC) Engr.	1,290	20.58	26,550
Mechanical (Plumbing) Engr.	960	17.25	16,560
Electrical Engr.	1,250	18.61	<u>23,260</u>
Subtotal			\$66,370
SCHEDULE V			
Item 1D			
Mechanical Engineering	410	20.58	8,440
Electrical Engineering	240	18.61	<u>4,470</u>
Subtotal			\$12,910
SCHEDULE VI			
Item 1E-1			
Mechanical Engineering	2,940	20.58	60,510
Electrical Engineering	2,410	18.61	<u>44,850</u>
Subtotal			\$105,360

SCHEDULE VII

Item 1E-2

Manhours

Rate

Amount

Mechanical (HVAC) Engr.	4,150	20.58	\$ 85,410
Mechanical (Plumbing) Engr.	3,100	17.25	53,480
Electrical Engr.	4,020	18.61	<u>74,810</u>

Subtotal

\$213,700

September 17, 1974

Project No. N-CO-72-600
New Denver Mint

MAN HOUR EVALUATION FOR MECHANICAL AND ELECTRICAL PORTIONS OF THE WORK

<u>SCHEDULE I</u> Item 1A	<u>Estimated Man Hours</u>
Principals (Officers)	40 hours
Chief Engineers/Spec. Project Mgs.	60
Sr. Engineers	45
Engineers (Sr. Designers)	-
Jr. Engineers (Designers)	-
Sr. Draftsman	10
Draftsman	-
Misc. Type and Tech., Reports	<u>10</u>
Total	165 hours

<u>SCHEDULE III</u> Item 1B-2	
Principals (Officers)	200 hours
Chief Engineers/Spec. Project Mgs.	640
Sr. Engineers	560
Engineers (Sr. Designers)	320
Jr. Engineers (Designers)	-
Sr. Draftsman	100
Draftsman	-
Misc. Type and Tech., Reports	<u>100</u>
Total	1,920 hours

SCHEDULE IV
Item 1C

Estimated
Man Hours

Principals (Officers)	240 hours
Chief Engineers/Spec. Project Mgs.	1,200
Sr. Engineers	360
Engineers (Sr. Designers)	480
Jr. Engineers (Designers)	240
Sr. Draftsman	640
Draftsman	240
Misc. Type and Tech., Reports	<u>100</u>
Total	3,500 hours

SCHEDULE VII
Item 1E-2

Principals (Officers)	370 hours
Chief Engineers/Spec. Project Mgs.	1,100
Sr. Engineers	1,800
Engineers (Sr. Designers)	4,800
Jr. Engineers (Designers)	3,200
Sr. Draftsman	2,400
Draftsman	3,200
Misc. Type and Tech., Reports	<u>400</u>
Total	17,270 hours

Pricing Proposal File

Handbook "Criteria for a Federal Office Building"

GENERAL SERVICES ADMINISTRATION
WASHINGTON, DC 20405

PBS P 3425.8
November 3, 1971

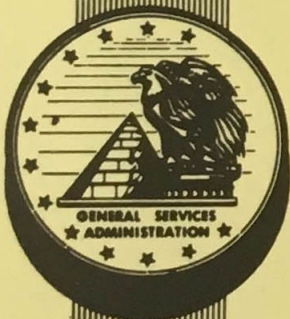
GSA ORDER

SUBJECT: Criteria for a Federal office building

1. Purpose. This order promulgates and transmits a new publication, HB, Criteria for a Federal Office Building.
2. Use. This handbook is a guide for architects and engineers who design Federal office buildings. It is primarily oriented to contract architect-engineers, but it also is useful to PBS personnel.
3. Freedom of design. This handbook implements current GSA policy by providing maximum freedom of design. Deviations from technical requirements to facilitate innovative designs, new concepts and value engineering evaluation are encouraged, providing a professional judgment has been made that a safe, adequate, more economical or better design will result. However, deviations from those requirements included in Public Laws, Federal Procurement Regulations, Executive Orders, and similar regulations are not authorized.
4. Instructions to contract architect-engineers.
 - a. This handbook will be compatible with the revised edition of the HB, Instructions to Contract Architect-Engineers (PBS P 3410.1C) due for publication in January, 1972.
 - b. When using the HB, Instructions to Contract Architect-Engineers (PBS P 3410.1B) in conjunction with this handbook, chaps. 2, 3-2a, d, 4, and 5-4 of PBS P 3410.1B do not apply, except if cited in the architect-engineer's contract.
 - c. The HB, Architectural Criteria (PBS P 3410.5A); the HB, Structural Engineering (PBS P 3475.1B); and the HB, Mechanical and Electrical Engineering (PBS P 3460.1C) are not applicable to projects utilizing this handbook.
5. Free distribution. Upon receipt of justifiable request, copies of this handbook may be distributed in reasonable quantity, free of charge, to other Federal agencies, to foreign governments and to industry representatives for information and constructive comment.

Distribution: A-6, 8; B-8 c, d, e, g, i, o, u, v, w, x, y; Attachment
C-8 c 2, 8, d 1, 3, i, v, w, x, y; F; G-8;
H-6a, 8-b, c, g; I-8 b 2, 3, c 1, 2, 5, g;
plus PBS-8 and figure 1

CRITERIA FOR A FEDERAL OFFICE BUILDING



A GSA HANDBOOK

GENERAL SERVICES ADMINISTRATION
WASHINGTON, D. C.

November 3, 1971

PBS P 3425.8

CHAPTER 1. GENERAL

CHAPTER 2. ARCHITECTURAL REQUIREMENTS

CHAPTER 3. STRUCTURAL REQUIREMENTS

CHAPTER 4. MECHANICAL REQUIREMENTS

NOTICE

THE PUBLIC BUILDINGS SERVICE HAS PREPARED THIS DOCUMENT FOR USE IN THE
GENERAL SERVICES ADMINISTRATION CONSTRUCTION PROGRAM. USERS OF THIS
DOCUMENT FOR ANY OTHER PURPOSE ARE CAUTIONED THAT IT IS SUBJECT TO
CHANGE WITHOUT NOTICE.

CRITERIA
FOR A
FEDERAL OFFICE BUILDING

GENERAL - TABLE OF CONTENTS

- CHAPTER 1. GENERAL
- CHAPTER 2. ARCHITECTURAL REQUIREMENTS
- CHAPTER 3. STRUCTURAL ENGINEERING
- CHAPTER 4. MECHANICAL ENGINEERING
- CHAPTER 5. ELECTRICAL ENGINEERING
- CHAPTER 6. ENVIRONMENTAL PROTECTION
- CHAPTER 7. SPECIAL CONSIDERATIONS
- CHAPTER 8. FIRESAFETY AND WARNING SYSTEMS

TABLE OF CONTENTS

CHAPTER 1. GENERAL

<u>Paragraph Titles</u>	<u>Paragraph Numbers</u>
Purpose	1
Definitions	2
Economy of design	3
Basic assumptions	4
Codes	5
Department of Labor Standards	6
Design analysis	7
Reference documents	8
Construction contract documents	9
Proprietary systems and equipment	10
Supplemental criteria	11

and can be proven. Ease of maintenance is a primary consideration in the selection and assembly of interior and exterior materials. Note: The requirements of the Buy America Act, 41 U.S.C. 10 a-d are applicable.

4. Basic assumptions.

- a. Criteria in this handbook represent a minimum acceptable to GSA.
- b. Criteria herein do not apply to special purpose space (e.g., courts, auditoriums, and laboratories).
- c. The A-E will base his design on authoritative, published criteria. Unless specific criteria are given elsewhere current criteria promulgated by nationally recognized professional, technical, and scientific organizations are generally acceptable.
- d. A-E assistance may not be available during construction. Accordingly, contract documents shall be self-sustaining and all-inclusive.

5. Codes. If one of the following model codes has been adopted by the locality of the project, it shall apply. If the locality has not adopted a model code, the least restrictive of the requirements contained in any one of the following shall be considered a minimum requirement:

- a. Basic Building Code, BBC (Building Officials and Code Administrators International, Inc., BOCA).
- b. National Building Code, NBC (American Insurance Association, AIA).
- c. Southern Standard Building Code, SSBC, (Southern Building Code Congress, SBCC).
- d. Uniform Building Code, UBC (International Conference of Building Officials, ICBO).

6. Department of Labor Standards. The drawings and specifications for each project shall show and require construction features and practices which conform to the applicable Occupational Safety and Health Standards (29 CFR - Part 1910) and the Safety and Health Regulations for Construction (29 CFR - Part 1518) as promulgated by the Department of Labor.

7. Design analysis. The A-E shall prepare a rationale of the contemplated design. The major system elements comprising each of the technical disciplines covered in the subsequent chapters (e.g., architectural requirements and structural engineering) shall be treated briefly, but clearly. Coordination and interfacing considerations, both between the elements of each discipline and between the disciplines, shall be delineated.

8. Reference documents. The current issue of the various published documents referenced herein are applicable to this handbook.

9. Construction Contract documents.

a. General.

(1) Contract documents as a whole, as well as the component comprising same and portions thereof, shall permit fully open, competitive bidding among interested contractors, manufacturers, and suppliers.

(2) GSA Order 3425.5E lists current guide specifications and related documents which are available for use in developing contract documents for a project.

b. Specifications.

(1) Standard Form 23A, General Provisions and applicable sections of GSA Order PBS 3425.5E Division 1 General Requirements will be incorporated in the project specifications by GSA.

(2) Federal Procurement Regulations, subparagraph 1-1.305, require the maximum possible use of Federal, Military (MIL) specifications, or Departmental Standards in Federal projects.

(3) Where Federal Specifications are not available, nationally recognized standards may be used. The use of industry and independent agency standards (e.g., Underwriters' Laboratories, Inc. (UL), American National Standards Institute (ANSI), Airconditioning and Refrigeration Institute (ARI), American Society of Testing Materials (ASTM), and Electrical Testing Laboratories, Inc. (ETL)) is encouraged. Requirements for a label or listing of the agency specified must not be made mandatory; however, compliance with the requirements of the standards may be mandatory. Accordingly, specifications should state that a label or listing will be acceptable proof of compliance with applicable requirements or, in lieu thereof, the contractor may submit proof from a qualified, independent testing laboratory that the product complies with the requirements, including method of test.

c. Drawings. Delineate requirements for vertical transportation and special mechanical equipment (pits, drains, clearances, openings, equipment locations and supports, machine room(s), and applicable details) on the appropriate structural, architectural, electrical and mechanical drawings.

d. Calculations. Calculations shall be provided to support the design. The degree and depth of the calculations will depend upon the stage of development of the design.

e. Submissions. The documents and material comprising the various stages of design development shall be as required by the A-E's contract schedule of submissions and the criteria in the program of requirements.

10. Proprietary systems and equipment. Federal Procurement Regulations impose stringent limitations on brand names or equal, which must be adhered to. The following excerpt from § 1-1.307.4 is most significant:

"(b) 'Brand name or equal' purchase descriptions should set forth those salient physical, functional, or other characteristics of the referenced products which are essential to the needs of the Government, contain the following information to the extent available, and include such other information as is necessary to describe the item required:

(1) Complete common generic identification of the item required.

(2) Applicable model, make, or catalog number for each brand name product referenced, and identity of the commercial catalog in which it appears.

(3) Name of manufacturer, producer, or distributor of each brand name product referenced (and address if company is not well known)."

11. Supplemental criteria. Supplemental criteria furnished to the A-E will consist of, but not necessarily be limited to, the following:

a. Space directive

b. Construction cost limitation

c. Project directive forms, to be filled out by the A-E.

TABLE OF CONTENTS

CHAPTER 2. ARCHITECTURAL REQUIREMENTS

<u>Paragraph Titles</u>	<u>Paragraph Numbers</u>
Building area calculations	1
General office space requirements	2
Automatic data processing space requirements	3
Facilities for the physically handicapped	4
Glazed openings	5
Glass	6
Balconies and areaways	7
Building identification	8
Site data	9
Food service areas	10
Facilities for servicing equipment	11

TABLE OF CONTENTS

CHAPTER 2. ARCHITECTURAL REQUIREMENTS

<u>Paragraph Titles</u>	<u>Paragraph Numbers</u>
Building area calculations	1
General office space requirements	2
Automatic data processing space requirements	3
Facilities for the physically handicapped	4
Glazed openings	5
Glass	6
Balconies and areaways	7
Building identification	8
Site data	9
Food service areas	10
Facilities for servicing equipment	11

CHAPTER 2. ARCHITECTURAL REQUIREMENTS

1. Building area calculations.

a. Gross and total area defined. Gross area (the sum of):

(1) Total net area (the sum of):

(a) Net assignable area (given in space directive)

(b) Horizontal circulation

(2) Vertical circulation.

(3) Mechanical area.

(4) Construction area.

b. Method. The method to be used for calculating building areas is contained in AIA Architectural Graphic Standards.

2. General office space requirements.

a. Planning module. Generally, the planning module should be 5 feet. If a different module is proposed, the A-E shall demonstrate that the proposed module, as compared to the 5 foot module:

(1) meets the functional requirements of the space; and

(2) is equally, or more economical.

b. Clear height. The minimum clear height (i.e., vertical distance from floor to the lowest obstruction above) shall be 8 feet.

c. Door width. The minimum door width shall be 3 feet.

3. Automatic data processing space requirements. Spaces for automatic data processing (ADP) facilities must have a minimum clear height of 9 feet above an elevated floor system. The structural floor shall be designed to support a uniform live load of 150 psf.

4. Facilities for the physically handicapped. Public Law 90-480, 82 Stat. 718, as amended, as supplemented by Federal Property Management Regulations, 41 CFR 101-17.7, requires that all Federal buildings, including site work, shall be designed, constructed, or altered, in accordance with Specification for Making Buildings and Facilities Accessible to and Usable by, the Physically Handicapped (ANSI A-117.1).

5. Glazed openings. All interior and exterior doors with full-height glazed panels shall have horizontal push and pull bars. Also, all partitions and exterior fenestration which are glazed to floor line, shall have protective barriers at push bar height.
6. Glass. Tempered glass shall be used for glazed doors and sidelights, and other areas adjacent to or in the line of pedestrian traffic. Spandrel glass located above pedestrian areas shall have adhered backing and conform to test, certification, and labeling requirements of guide specification, Glazing (PBS 4-0885).
7. Balconies and areaways. Balconies, areaways, openings, and steep drops shall be enclosed by an adequate protective barrier not less than 42 inches high.
8. Building identification. The following items are required for all Federal buildings:

a. Building title.

b. Government furnished replicas of obverse and reverse side of the Great Seal of the United States. These replicas are natural anodized aluminum and are 24, 36, or 48 inches in diameter.

c. Ground-mounted flagpole, located at left of building entrance.

9. Site data. See AIA Handbook of Professional Practice, chap. 11.

10. Food service areas.

a. Design.

(1) Food service facilities shall conform to the requirements of Food Service Sanitation Manual, Public Health Service Publication No. 934, which shall be considered as minimum requirements.

(2) Local jurisdiction requirements which are more stringent than the requirements above, shall be considered in the design of the facility.

(3) Additional criteria may be furnished to the A-E prior to or during the early phases of design.

b. Local approval. The designer shall obtain approval of preliminary drawings by local health authorities when required (e.g., District of Columbia). Drawings and specifications also shall be approved by the local authority, so that an operating permit can be obtained for the facility at the completion of construction.

11. Facilities for servicing equipment. (See chap. 4-1.2.)

TABLE OF CONTENTS

CHAPTER 3. STRUCTURAL ENGINEERING

<u>Paragraph Titles</u>	<u>Paragraph Numbers</u>
Loading	1
Materials	2
Construction	3

TABLE OF CONTENTS

CHAPTER 4. MECHANICAL ENGINEERING

<u>Paragraph Title</u>	<u>Paragraph Number</u>
PART 1. GENERAL	
Life cycle costing analysis	1.1
Servicing requirements	1.2
Facilities for the physically handicapped	1.3
PART 2. PLUMBING	
Codes and standards	2.1
Fixtures	2.2
Floor drains	2.3
Cleanouts	2.4
Hot and cold water systems	2.5
Fire protection	2.6
Gas piping	2.7
PART 3. AIRCONDITIONING, HEATING AND VENTILATING	
Facilities requiring airconditioning	3.1
Load calculations	3.2
Systems	3.3
Equipment	3.4
PART 4. VERTICAL TRANSPORTATION AND SPECIAL MECHANICAL EQUIPMENT	
Codes	4.1
Elevators	4.2
Conveyors	4.3
Adjustable loading ramps	4.4
Exterior powered platforms	4.5

CHAPTER 4. MECHANICAL ENGINEERING

PART 1. GENERAL

1.1 Life cycle costing analysis.

a. The A-E shall submit the life cycle costing analysis for his composite design of heating, refrigerating, and electrical facilities. The analysis shall conform to recommendations and procedures in the American Society of Heating, Refrigerating and Air Conditioning Engineers (ASHRAE) Guide and Data books. Additionally, it shall be coordinated with chap. 5-1, Service, voltage and metering selection.

b. A review of all normally available common energy sources, conforming to chap. 6, Environmental Protection, shall be prepared to determine which energy sources warrant cost-benefit analysis.

c. The analysis shall consider the following:

(1) Utility rates, and applicable special conditions or provisions, must have the approval of the Federal, State, or local regulatory agency having jurisdiction. Additionally, GSA enters into area-wide contracts for electric services in many areas. Use these rates unless special conditions justify a separate contract. Similarly, fuel oil normally is purchased by an area-wide Government contract. Obtain pertinent information, including delivery and storage requirements, from the participating GSA regional office.

(2) Standby fuel systems are required where interruptible gas is used. The fuel shall be No. 2 oil, unless analysis shows that another fuel or grade of oil is cheaper.

(3) Reliability and simplicity of operation and maintenance are legitimate trade offs against marginal savings in cost.

d. The complete analysis shall include the following:

(1) A cost-benefit analysis of a least the three most promising energy sources used in combinations with at least each of two methods for refrigeration.

(2) All supporting data and calculations. Where refrigeration equipment is steam-actuated, include composite curves of all heating and refrigeration loads throughout the entire year to determine the time and magnitude of the peak load. (Note: The total boiler plant capacity shall be equal to this peak load.)

(3) Information on the type of fuel burning equipment and size and location of the fuel storage.

(4) A complete description of the service components to be furnished, installed, and/or connected by the utility companies. Also, include contract reservations to cover unusual conditions which may require reimbursement to the utility companies.

1.2 Servicing requirements.

a. Clearance shall be allowed around all equipment (machines) for removal of parts, repairs and replacements. Arrange or provide facilities (door or window openings, corridors, removable panels in building walls, and trap doors) for the replacement of the largest components of equipment without disturbance to the building's structure or other systems. Generally, openings and passageways shall be suitable for standard equipment; where this is not possible, include limiting dimensions on drawings or in specifications.

b. Means shall be provided for handling parts weighing over 50 pounds (e.g., heads, sheaves, casings, covers, motors, and gear boxes). The type of lifting equipment used in each case must be determined on the basis of the number of machines in a group, the size and weight of parts, accessibility, and the probable frequency of use.

c. The arrangement of overhead piping and equipment in high rooms shall, wherever possible, permit maximum grouping of valves and other operating devices to minimize access facilities (e.g., platforms, catwalks, and ladders) or permit orderly groupings of valve chains where they will not be hazardous obstructions.

d. Facilities (i.e., doors, panels or equal) shall be provided for access to valves and other equipment, requiring periodic examination or maintenance, which are concealed by architectural treatment. Also, provide clear, permanent access to roof-mounted equipment; a scuttle and ladder comprise an acceptable minimum.

e. Isolating valves shall be provided to facilitate servicing and repair of equipment, including room units. Such valves also shall be provided for individual risers serving over three floors, and elsewhere to isolate units (room and direct radiation) in groups of not over 10.

1.3 Facilities for the physically handicapped. (See chap. 2.)

PART 2. PLUMBING

2.1 Codes and standards.

a. The work, generally, shall be designed to comply with the following, which are considered to be minimum requirements:

- (1) National Plumbing Code
- (2) American Gas Association (AGA)
- (3) National Fire Protection Association (NFPA)
- (4) American Society of Heating, Refrigerating, and Air Conditioning Engineers (ASHRAE)
- (5) Food Service Sanitation Manual - United States Public Health Service (USPHS)

b. Any deviation of a, above which may be necessary to comply with the requirements, regulations and codes of local authorities having jurisdiction shall be considered in the design of the system.

c. Separate sanitary and storm systems shall be provided on the site and throughout the building, even though a combined sewer system is available in the street. Completely independent systems shall extend at least 5 feet beyond the wall of a building, from which point a common house sewer may be run to the public sewer. If required by local authority, each system shall be carried to the point of connection to the public sewer.

2.2 Fixture types. Fixture types shall be as required to suit occupancy.

2.3 Floor drains.

a. General. Floor drains shall be installed in boiler rooms, mechanical equipment rooms, kitchen and dishwashing areas, garages, and similar areas where specifically required. Floor drains shall not be installed in toilet rooms.

b. Garage requirements. Floor drains in garage areas shall not be provided with individual traps, but shall be connected to a separate system and run to a combination sand and oil trap or interceptor before connecting to a sewer, sump pump, or sewage ejector.

2.4 Cleanouts. Cleanouts shall not be installed in the floor of toilet rooms.

2.5 Hot and cold water systems.

a. Water treatment. Treatment of cold water supply is usually not necessary where the water is obtained from a municipality or from a corporation. Water softeners of the Zeolite type shall be installed for the hot water supply and the boiler feed where the water has a carbonate hardness of 10 or more grains, or total hardness of 18 or more grains, per gallon. Also, softeners shall be installed for small power boiler feed water if the carbonate hardness is 4 or more grains per gallon. If a complete analysis is not available, only the total hardness shall be considered.

b. Water heater sizing (conventional design). The domestic water heating equipment shall have sufficient capacity to deliver 120 F. water at all times. Heater sizing shall be in accordance with the methods employed in the ASHRAE Guide and Data books.

c. Optional design.

(1) If of economic advantage, as established by a cost-benefit analysis, the A-E's design may provide for a single pipe, tempered water system.

(2) The system shall be used in lieu of the conventional hot and cold water systems. It shall supply domestic water to lavatories, water closets, and urinals, but shall not serve equipment such as drinking water fountains.

(3) The temperature of the water circulated shall be 90 F., or less if determined to be satisfactory by the designer.

2.6 Fire protection. Fire protection systems and equipment, including sprinkler systems, fire pumps, fire standpipes, etc., shall be provided in accordance with chap. 8 and National Fire Protection Association pamphlet Nos. 13 and 14.

2.7 Gas piping. All gas piping shall be designed in accordance with Installation of Gas Appliances and Gas Piping, NFPA Standard No. 54 or ANSI Z21.30.

PART 3. AIRCONDITIONING, HEATING AND VENTILATING

3.1 Facilities requiring airconditioning. Airconditioning shall be provided for the following:

- a. Buildings where local practice provides airconditioning for office and similar areas.
- b. Cafeterias, including serving areas.
- c. Kitchens (include bakeries and dishwashing rooms) and elevator rooms in airconditioned buildings if required to meet design conditions (See 3.2, below.)
- d. Shops in airconditioned buildings; also, shop areas where warranted by local conditions or practice.
- e. Special purpose rooms (e.g., automatic data processing) housing equipment requiring a controlled operating ambient.

3.2 Load calculations. Generally, load calculations shall be based on data and procedures in the ASHRAE Fundamentals and Guide and Data books and the following:

a. Cooling. Use climatic conditions tabulated in the 2-1/2 percent Summer columns (ASHRAE Fundamentals). Inside (indoor) design conditions may conform to local practice; otherwise use 76 F. DB and 50 percent RH, except use 85 F. DB for kitchens and 90 F. DB for elevator machine rooms.

b. Heating. Use the Winter Median of Extremes column of the Climatic Conditions table (ASHRAE Fundamentals). Where the locality is not listed use, as the outside design temperature, either the lowest recorded temperature plus 15 F. or the average minimum temperature for the locality. Inside design temperatures may conform to local practice; otherwise use 70 F. for all spaces except:

- (1) Bathrooms and toilet rooms containing bathing facilities - 75 F.
- (2) Shops not occupied by sedentary personnel - 60 F.
- (3) Garages - 50 F.

c. Humidification. Humidification requirements shall conform to local practice. (Note: Consider type of glazing when specifying these requirements and vice versa.)

3.3 Systems.

a. Airconditioning.

(1) Spaces served by each air-handling system shall be divided into zones, i.e., groups of rooms having same exposures and load characteristics (occupancy density, activity, time, use, etc.), which can be maintained at reasonably uniform temperatures without individual room control. Net floor area of each zone should not exceed 2,500 sq. ft., approximately. When zoning systems serving both perimeter and interior areas, especially consider method of controlling perimeter heating.

(2) Separate airconditioning capability shall be provided for each space (areas) having special purpose or hours of occupancy (e.g., 24-hour service); such as, conference rooms having a floor area of 500 sq. ft. or more and automatic data processing (ADP) space.

b. Heating.

(1) When selecting a type of system, consider operating agency's operating practice. Generally, Federal buildings are closed at night, during weekends, and on holidays. Heating and airconditioning systems usually are shut down during unoccupied periods.

(2) Wherever practicable, systems should be divided into zones having same solar exposure, wind exposure and hours of occupancy. Also, tall buildings should be zoned vertically to offset changes in heating requirements with elevation and to minimize maintenance.

(3) Heating facilities shall be provided to assure comfort for occupants in areas near windows and in areas with weather-exposed floor underfoot. (Note: Exposed floors may require insulation to limit heat loss.)

c. Snow-melting systems. Requirements for snow-melting systems shall be determined on an individual project basis.

3.4 Equipment.

a. Outdoor air terminals. Air intakes shall be located remotely from contaminated air sources (e.g., effluvia from smoke stacks, cooling towers, reproduction machines, fume hoods and vehicle exhausts), streets, and wide roof areas. Design also must protect against vandalism and minimize entrance of snow.

b. Adjustments and test facilities.

(1) All systems and equipment shall be tested, adjusted and balanced in accordance with recommendations and procedures in ASHRAE

November 3, 1971

PBS P 3425.8

Guide and Data books. The design of each system shall integrate all necessary facilities. Also, the qualifications of test personnel shall be stipulated.

c. Air leakage. Air leakage requirements shall be specified for all air-handling systems, including masonry work forming parts of same. A maximum leakage rate shall be assigned to each pressure classification (low, medium, and high).

d. Steam pressure reducing valves. Single stage pressure reduction stations shall be used where feasible. Generally, pressure reducing valves for a two-valve station should be selected for $1/3$ and $2/3$ of the maximum load (flow), and those for a three-valve station should be selected for $1/6$, $1/3$, and $1/2$ of the maximum load. No pressure reducing valve shall be larger than 4 inches in size. Where three 4-inch valves will not handle the maximum load, provide additional valves. The smallest valve shall effectively handle the minimum load; where the minimum load is less than that required for normal valve sizing, provide an additional valve for this load. Attention is directed to space and sound level requirements referenced in GS, Heating Apparatus (PBS: 4-1570).

e. Water treatment. Valved connections shall be provided for water treatment equipment.

PART 4. VERTICAL TRANSPORTATION AND
SPECIAL MECHANICAL EQUIPMENT

4.1 Codes. All vertical transportation installations shall conform to the Safety Code for Elevators, Dumbwaiters, Escalators and Moving Walks (ANSI A17.1) as a minimum.

4.2 Elevators.

a. Calculations.

(1) Calculations shall be submitted, as part of concept submission, when two or more passenger elevators are required.

(2) Requirements shall be calculated as follows:

(a) Required number of passenger elevators $(N) = PT/300E$

Where: P = Persons carried in 5 minutes on morning peak.

= 16.5 or 14.5 percent of building population.

Use 16.5 percent when all occupants start work at the same time; use 14.5 percent when they start work at staggered times.

Building population = $\frac{\text{sq. ft. net floor area}}{120 \text{ sq. ft. per person}}$

T = Elevator round trip time (seconds) on morning peak

E = Normal number of persons per car on morning peak

= $.80 \times \text{car capacity (pounds)} / 150 \text{ pounds}$

(b) The average time interval of dispatch, T/N , should be as low as practical; 30 seconds is regarded as acceptable.

b. Freight elevators. At least one freight elevator 7 feet 6 inches wide by 11 feet deep, 6000 pound (Class C) shall be installed in buildings with gross floor areas exceeding 250,000 sq.ft. and with at least three stories above ground level.

c. Combination passenger and freight elevator. A combination passenger and freight elevator, suitable for furniture, partitions, and office equipment, shall be installed in all buildings not having a freight elevator, minimum capacity 3500 pounds.

d. Telephones. Each car shall include provisions for a telephone.

4.3 Conveyors.

a. General. Except for selective vertical mail tray conveyors, justification usually is required to establish the necessity for most suitable type, capacity, and location of each conveyor. Studies normally are made in consultation with the prospective using agency; provisions for future conveyors also are considered.

b. Selective vertical mail tray conveyors. Either a selective vertical mail tray (tote box) conveyor or future provisions for same shall be provided in all buildings having ten or more floors with at least 15,000 sq.ft. gross area per floor. Specific requirements are:

- (1) Industry standard selective-vertical correspondence conveyor.
- (2) 10-foot long gravity roller discharge into the landing platform level mail room.
- (3) 4-foot long gravity roller discharge into 60 square foot work area at all other floors served.
- (4) 10-inch high by 12-inch wide by 16-inch long tote boxes.
- (5) Hoistway access door at each floor.
- (6) Hoistway receptacle and light at each floor, in pit, and in machine room.
- (7) Three phase conveyor disconnect in machine room.

4.4 Adjustable loading ramps. At least one adjustable loading ramp is required for the loading platform when the building's gross floor area exceeds 100,000 sq.ft. and freight movement is heavy.

4.5 Exterior powered platforms.

a. General. Requirements for exterior powered platforms, for window washing and other maintenance, shall be determined on an individual project basis.

b. Installation. The installation shall conform to Safety Requirements for Powered Platforms for Exterior Maintenance (ANSI A120.1) as a minimum.

TABLE OF CONTENTS

CHAPTER 5. ELECTRICAL ENGINEERING

<u>Paragraph Titles</u>	<u>Paragraph Numbers</u>
Service voltage and metering selection	1
Calculations	2
Electrical systems	3
Power and telephone system for office space	4
Lighting	5
Emergency systems	6
Telephones	7
Miscellaneous	8

CHAPTER 5. ELECTRICAL ENGINEERING

1. Service voltage and metering selection.

a. Purchase of electricity at primary voltage should only be selected if a cost-benefit analysis indicates it to be of advantage. Exceptions to this are when the size and nature of the load for a large building necessitates a higher distribution voltage, or when the availability of secondary voltage is limited. (For information on utility rates, see chap. 4-1.1, Life cycle costing analysis.)

b. The design engineer shall obtain a written proposal from the electric company serving the area, which shall fully describe the service components. (See chap. 4-1.1, Life cycle costing analysis.)

2. Calculations.

a. Load. Calculations shall indicate the nature of the loads (e.g., lighting, receptacles, power, and elevator) and shall show the allowance for spare capacity.

b. Lighting. Calculations shall be made for each significant area. Calculations, generally, shall be in accordance with the I.E.S. lighting handbook, however, the lumen method may be used in lieu of the zonal cavity method.

c. Voltage drop. Voltage drop calculations shall be made for all feeders.

d. Short circuit. Short circuit calculations shall be made to substantiate the proper selection of overcurrent protective devices.

3. Electrical systems.

a. Service. Service equipment shall include spare capacity of approximately 25 percent of the initial load.

b. Service equipment room. (See chap. 4-1.2, Servicing requirements.)

(1) A separate equipment room shall be provided for electrical service equipment.

(2) Room shall not be located directly below or opposite the main building entrance. Room shall be sized for future addition of equipment.

(3) Exit doors shall be provided with panic type hardware.

c. Electric and telephone closets. Separate electric and telephone closets, located throughout the building, are preferred for housing electrical distribution equipment, dry type transformers, and telephone company equipment. Each telephone closet, generally, shall not serve an area of more than 7000 sq. ft., net.

d. Feeders.

(1) General. Wire and conduit design shall be based on copper conductor. However, specifications shall permit the use of aluminum conductor as a contractor option and provide for contingent increases in conduit sizes. Insulation shall be THW or better.

(a) Generally, lighting feeders shall be segregated from power or receptacle feeders.

(b) Generally, busways shall not exceed a rating of 1600 amperes, and shall not be located above suspended ceilings or in other concealed spaces.

(c) Neutrals for lighting feeders shall be full size.

(d) Spare capacity of not less than 20 percent shall be included in all feeder sizing.

(2) Elevator feeder arrangement. Each group of four or more elevators in a bank shall be provided with not less than two feeders (half on each feeder). Where feasible, feeders shall originate at different substations or switchboards.

(3) Cafeteria and kitchen. A separate feeder shall be provided for food preparation and serving equipment. Also, provide a kilowatt-hour meter, since the food service operator pays the Government for the energy consumed. Lighting, air conditioning, and ventilating loads should not be connected to this feeder.

e. Branch circuits. Branch circuits shall be copper conductor (minimum No. 12 AWG) in galvanized rigid steel conduit or EMT. Wiring, generally, shall be run concealed. Conduit for lighting in general office space shall be minimum 3/4-inch trade size. Not over six receptacles shall be connected to an individual circuit.

f. Overcurrent protection.

(1) Systems operating at 480 volts or higher shall have ground-fault protection, but care shall be exercised to prevent nuisance tripping and subsequent total outage of the building.

(2) Due consideration shall be given to coordination of overcurrent protective devices throughout the system.

(3) Lighting and appliance branch circuit panelboards shall be of the circuit breaker type; plug-in breakers shall not be used. Approximately 20 percent spare breakers shall be provided on lighting and appliance branch circuit panelboards. Approximately 10 percent spares and 10 percent spaces for futures shall be provided on distribution panels.

g. Switch outlets.

(1) Local switch control shall be provided for individual rooms with fixed partitions.

(2) Corridor lighting may be controlled by switches located near the elevator core or by a remote control system.

(3) Office lighting may be controlled by switches mounted on permanent partitions and columns (off centerline) near the entrance to the area. Switches shall not be provided in relocatable partitions. Switching by quadrants or areas should be considered.

(4) Exit and emergency lights shall be controlled at the emergency panelboard.

h. Receptacles. Duplex receptacles shall be provided at locations where convenience power obviously will be required, and as follows:

(1) Office space. In spaces with fixed partitions, provide NEMA 5-15R wall receptacles, 12 inches above the floor, and at eight foot intervals. On the exterior perimeter walls of general office space, provide two outlets per bay, off the module or mullion lines. (Also, see par. 4, Power and telephone system for office spaces.)

(2) Corridors. Provide NEMA 5-20R single receptacles, 12 inches above the floor, and at approximately 75-foot intervals. Circuit multi-story buildings vertically, with each riser on a separate circuit. Allow 1600 watts per circuit, use No. 10 AWG wire, and protect in panelboard with 20 ampere single-pole breaker. An outlet shall be located adjacent to each toilet and gear room.

(3) Telephone closets. Provide two NEMA 5-15R receptacles, 9 inches above the floor on opposite walls. Connect one to the nearest general purpose circuit and the other to the emergency panelboard. Allow 500 watts for each emergency receptacle with not over three closets per circuit.

(4) Gear rooms. Provide two NEMA 5-20R receptacles, 4 feet 6 inches above the floor. Locate one at the light switch and connect as a separate 1600 watt circuit. The second shall serve as the power supply to the floor scrubbing machine battery charger.

i. Motors. Motors 1/2 HP and larger, generally, should be 3-phase.

4. Power and telephone system for office spaces.

a. General office spaces are designed on a modular basis. Power and telephone service shall be provided at desk locations, utilizing underfloor systems or service columns. The distribution shall be compatible with the outlets selected and the module layout.

b. When definite information is not available, allow one duplex receptacle outlet and one telephone outlet for each 175 sq. ft. of net office floor area. Transformer capacity for the receptacle load shall be between 2 and 3 watts per sq. ft. of area served.

5. Lighting.

a. Illumination levels shall be in accordance with the Illuminating Engineer Society Lighting Handbook. The lighting for the general office space also shall be designed on a modular basis.

b. Special fixtures shall be avoided. The major fixture types shall be delineated on drawings; minor fixture types may be described.

c. Emergency and exit lighting.

(1) Exit lights. Fixtures shall be provided at building and stairway exits, changes of direction, corridor intersections, and other necessary locations to direct the public from the building.

(2) Corridors. Emergency lights shall be provided at not greater than 75-foot intervals, at corridor intersections, and at stairway exits. These lights may be a part of the normal corridor lighting.

(3) Lobbies and building exits. Emergency lights (selected fixtures of the normal lighting system) shall be provided in lobbies, and on both the interior and exterior of the building exits.

(4) Other areas. Emergency lights shall be provided in electrical service rooms, engineer's office, guard office, emergency generator room, elevator machine rooms, and like areas. Public assembly rooms and areas should similarly be provided with emergency and exit lights.

(5) Stairways. The lights at the floor landing in each stairway shall be connected to the emergency panelboard.

(6) Auxiliary battery operated light sets. Buildings without an emergency power plant shall have junction boxes in the stairways at the floor landing and at other critical locations. (See chap. 7-3.2.) These junction boxes are for auxiliary battery-operated light sets, furnished and installed by the Government. The boxes shall be 7 feet above the floor and wired to the emergency panel. Circuiting shall permit simultaneous charging of these units after they have become discharged.

d. Stairway (intermediate landings). Lights shall be provided at intermediate stairway landings; they shall be connected, in a riser, to the normal electrical wiring system.

e. Parking lots. Outside parking areas and pathways on site shall be provided with lighting standards.

6. Emergency systems. Emergency systems shall generally be in accordance with NFPA Standard 101, Code for Safety to Life, the NEC, and local codes. (See chap. 7, part 3 for emergency power plants.)

7. Telephones.

a. General. Raceway systems and other facilities for telephone service must be provided. Service normally will be obtained from the local telephone company.

b. Main equipment space. Sizes and locations of terminal, main switchboard and equipment rooms, and requirements for service entrance and cable riser systems, must be determined by consultation with the GSA regional office (Transportation and Communication Service) and the local telephone company.

c. Telephone closets. Telephone closets should be coordinated with electric closets and the distribution system. Additional information concerning telephone closets is contained elsewhere in this chapter.

d. Outlets. In addition to those for the general office raceway system, telephone outlets shall be provided in the following locations:

(1) Snack bars, shops, elevator machine rooms, elevator hoistways (mid-point of travel), electrical equipment rooms, mechanical equipment rooms, and similar spaces.

(2) Two per bay on the exterior perimeter walls of general office spaces, off of module or mullion lines.

(3) In public lobbies, elevator lobbies, loading platforms, and other areas where public convenience requires public (pay) telephones.

8. Miscellaneous.

a. Lightning protection system.

(1) Metal flagpoles and metal stacks shall be grounded in all cases.

(2) Complete building protection shall be provided in localities where other buildings of similar size and type are customarily so protected.

b. Clock outlets. Clock outlets should be provided in main lobbies, kitchens, cafeterias, and similar locations.

c. Front door bell. The main entrance shall be provided with a pushbutton with bells located in the guard office and engineer's office.

d. Fire alarm, civil defense, and watchman's clock systems. (See chap. 8.)

TABLE OF CONTENTS

CHAPTER 6. ENVIRONMENTAL PROTECTION

<u>Paragraph Titles</u>	<u>Paragraph Numbers</u>
General	1
Reference documents	2
Air pollution	3
Water pollution	4
Radiation control	5
Refuse disposal	6
Incinerators	7
Wet process destructors	8
Protection during construction	9

CHAPTER 6. ENVIRONMENTAL PROTECTION

1. General.

a. The project's design and construction shall meet all applicable Federal, State, and local requirements for the prevention, abatement and control of air and water pollution and the control of radiation and noise. This includes applicable laws, regulations or other edicts in effect or anticipated at the time the project is designed. In the event of a difference between Federal, State, or local requirements the more stringent shall normally apply.

b. Firesafety requirements. (See chap. 8.)

2. Reference documents. Pertinent information may be found in the following:

(1) GSA Order PBS 1060.1A, Prevention, Control and Abatement of Air and Water Pollution.

(2) Presidential Reorganization Plan No. 3 of 1970, published in the Federal Register (35 FR 15623) on October 6, 1970, and which established the Environmental Protection Agency.

(3) GSA Order PBS 1095.1A, Procedures for implementing Section 102(2)(C) of the National Environmental Policy Act of 1969, 83 Stat. 852.

3. Air pollution.

a. References. Additional pertinent references are:

(1) Bureau of the Budget circular A-78 dated May 18, 1970; and

(2) Specific Federal requirements included in the Code of Federal Regulations, Title 42, chap. IV, Part 476, titled: "Prevention, Control, and Abatement of Air Pollution from Federal Activities; Performance Standards and Techniques of Measurement." (Formerly chap. 1, Part 76.)

b. Large plants. If the project's boilers and other combustion units have a total input exceeding 1,000,000,000 B.t.u.h., GSA will request advice from the Environmental Protection Agency. The advice emanating therefrom shall be followed by the designer.

c. Other equipment.

(1) Incinerators. (See par. 6, Refuse disposal).

(2) Noxious products discharged from equipment (e.g., reproduction machines and fume hoods) shall be properly treated.

4. Water pollution.

a. References. Additional pertinent references are:

- (1) Bureau of Budget circular A-81 dated May 18, 1970; and
- (2) Specific requirements provided by the Water Quality Office (WQO) of the Environmental Protection Agency.

b. Review.

(1) Two copies of GSA Form 1287, Mechanical Data, Plumbing, and a sketch indicating all plumbing utilities at the site, shall constitute part of the concept submission. The responsible GSA official shall send one copy of these documents to the appropriate regional office of WQO for review. WQO's approval and comments shall be submitted to the A-E, who shall consider same in finalizing his design.

5. Radiation control.

a. Any room housing radiation producing materials or equipment shall be properly shielded to provide protection against radiation hazard.

b. Radiation producing equipment shall conform to Radiation Control for Health and Safety Act of 1968, Public Law 90-602, 82 Stat. 1173, and any implementing regulations issued by the Public Health Service of the Department of Health, Education and Welfare.

6. Refuse disposal.

a. Collection. Procedures for handling trash must be considered in the design. Pertinent information (e.g., methods of collecting waste, trash rooms, size and type of bags used, and revenue from refuse sale) may be obtained from the Chief, Buildings Management Division of the GSA regional office. Wherever feasible, refuse shall be removed from site for disposal elsewhere.

b. The design shall include facilities to implement the above procedure. In multi-story buildings provide, if feasible, straight vertical chutes with feed doors at each floor.

c. Trash chute and collection rooms shall be acoustically treated to minimize sound transmission. (Also, see chap. 7, part 2, Sound and Vibration Control.)

d. Wet process destructors and incinerators should destroy the maximum daily accumulation in not over 6 hours. Refuse shall not be

burned in open fires. Where refuse exceeds 8,000 pounds per day, make a cost-benefit analysis to establish the best type(s) of disposal equipment.

e. Incinerators, generally, shall not be provided except:

(1) To avoid a security or health problem, such as the disposal of pathological wastes and certain classified papers; or

(2) Where municipal or private disposal facilities are not available or are inadequate.

7. Incinerators. Incinerators shall meet the requirements of the Environmental Protection Agency, or subsequent revisions or replacements thereof, as follows:

(1) Interim Guide of Good Practice for Incineration at Federal Facilities dated November 1969.

(2) Specifications for Incinerator Testing at Federal Facilities dated October 1967.

(3) Addendum to Specifications for Incinerator Testing at Federal Facilities dated December 1967.

8. Wet process destructors.

a. Wet process destructors are available from the Federal Supply Service in sizes from 18 to 42 inches in diameter, with capacities of 100 to 400 pounds per hour.

b. Automatically controlled mechanical handling shall be used to the maximum feasible extent.

c. A small destructor may be used for destroying classified paper comprising not over 20 percent by weight of the total refuse, if the material is well mixed.

9. Protection during construction.

a. The PBS guide specifications which designate the requirements for environmental protection during construction are:

(1) Special Conditions (PBS: 4-0110) - Trucking and disposal of refuse;

(2) Demolition (PBS: 4-0211.01) - Dust control; and

(3) Earthwork (PBS: 4-0220) - Erosion and sedimentation control.

b. Where prohibited by a local ordinance or regulation, sprayed materials containing asbestos fiber shall not be used. Where not so prohibited, spray applications, as a minimum, must comply with guide specification, Sprayed Fire Protection (PBS: 4-0920).

c. Noise control. (See chap. 7-2.3.)

TABLE OF CONTENTS

CHAPTER 7. SPECIAL CONSIDERATIONS

<u>Paragraph Titles</u>	<u>Paragraph Numbers</u>
PART 1. FALLOUT SHELTERS	
General allowance	1.1
Special allowance	1.2
PART 2. SOUND AND VIBRATION CONTROL	
Partitions and ceilings	2.1
Mechanical and electrical equipment	2.2
Noise during construction	2.3
PART 3. EMERGENCY POWER PLANT	
General	3.1
Applications	3.2
Power sources	3.3
Plant capacity	3.4
Loads	3.5
Uninterruptible precise power requirements	3.6
Fuel and storage	3.7
Operation	3.8

PART 1. FALLOUT SHELTERS

1.1 General allowance. It is the policy of GSA to provide shelter spaces in Federal buildings within program and budgetary limitations. Therefore, the A-E should allow for enough fallout shelter space, with a protection factor of at least 40, for normal building occupancy plus 10 percent for transients.

1.2 Special allowance. In cases where there is a community need for public shelter space and provision has been made in the estimated project cost for fallout shelter space within budgetary limitations, the A-E should allow for as many spaces as possible above the normal building occupancy.

PART 2. SOUND AND VIBRATION CONTROL

2.1 Partitions and ceilings.

a. The minimum sound transmission class (STC) of enclosing construction, as determined by ASTM Standard E-90, shall be as follows:

- (1) Offices with a single occupant, where speech privacy is necessary - 40
- (2) Separation between an office and a typing pool - 40
- (3) Conference rooms with floor area less than 500 sq. ft. - 40
- (4) Conference rooms with floor area larger than 500 sq. ft. - 45
- (5) Training rooms - 45
- (6) Separation between a mechanical equipment room and an office area - 50

b. Where a construction is detailed and obviously equals or exceeds the applicable STC specified, no test is required.

c. The minimum STC of suspended ceiling assemblies in general office spaces shall be 40, as determined by Acoustical and Insulating Materials Association Test AMA-1-II.

2.2 Mechanical and electrical equipment.

a. Experiences indicate that special provisions and expertise are required to avoid costly correction of problems caused by noise and vibration generated by mechanical and electrical equipment. Guide specification, Vibration Isolation (PBS: 4-1515) was prepared to minimize such problems.

b. Use data in ASHRAE Guide and Data books to design vibration isolation and other sound control facilities.

c. The coordinated design shall limit noise in occupied spaces with all equipment operating. Generally, specify a sound level for each type of space within the applicable ASHRAE range of NC Criteria Curves.

d. All equipment on the site, irrespective of location, shall meet State and local ordinances and regulations.

e. Consider sound level requirements (noise and vibration) when selecting type of, and location for, electric ballasts and transformers.

2.3 Noise during construction.

a. The Federal requirements for noise exposure are contained in the regulations promulgated pursuant to the Walsh-Healey Public Contracts Act and Title 29-Labor, chap. XIII-Bureau of Labor Standards, Department of Labor, Part 1518-Safety and Health Regulations for Construction, as published in the Federal Register, April 17, 1971.

PART 3. EMERGENCY POWER PLANT

3.1 General. Keep requirements for emergency power to an absolute minimum. Agencies will provide, via GSA, detailed data describing their minimum emergency power needs, equipment heat generation and the equipment, if any, requiring uninterruptible precise power.

3.2 Applications. Provide an emergency power plant in buildings having:

- a. Eight or more occupied floors above the main floor, or seven floors where gearless elevators are specified; or
- b. Two or more agencies, each of which has critical requirements (e.g., hurricane warning centers, and rescue operations); or
- c. Equipment which must operate continuously without interruption (e.g., laboratory equipment); or
- d. Frequent electrical outages; or
- e. Pumps, sewage ejectors, or heating plants which must continue operation to prevent flooding and freezing.

3.3 Power sources.

a. Generally, a single generator shall be provided in each building; where feasible, use a single generating plant for several buildings on one site.

b. Power sources such as batteries and static inverters shall be considered when the load does not exceed 20 KVA, provided elevators are not to be served.

3.4 Plant capacity. The plant capacity shall be adequate to serve simultaneously the loads enumerated below. The inrush current of the largest group of motors automatically started simultaneously must be considered. The initial voltage dip should not exceed 20 percent.

3.5 Loads.

a. The elevator load shall depend on the number of elevators, as follows:

(1) Six elevators and less, the load of one elevator. (Note: Provide connections and control for the selective operation of each elevator, but only one at a time.)

(2) More than six elevators, the load of two elevators. (Note: Provide feeder connections and other facilities to operate one elevator

continuously, while the remaining elevators are selectively operated one at a time.)

b. The agency equipment load shall consist of the power required for the actual equipment which must operate continuously, plus that of emergency lights not included in emergency system load.

c. The emergency system load shall consist of all lights and equipment served by emergency panelboards.

3.6 Uninterruptible precise power requirements.

a. Certain agency equipment cannot tolerate a short break or minor variations (voltage, frequency or wave form) in the power supply. The special equipment required, to provide the necessary uninterruptible precise power, normally is furnished as part of the agency's total equipment package.

b. Power from the building's emergency plant normally shall be supplied to the room housing the equipment. The agency equipment should be so connected that uninterruptible precise power is provided during the plant's start-up.

3.7 Fuel and storage.

a. The fuel shall be diesel oil, No. 2 fuel oil, or noninterruptible gas.

b. Generally, the storage tank shall have capacity for a minimum of 5 days continuous operation at full load. However, larger capacity may be justified, depending on record of electric outages and fuel availability. A separate tank will not be required where a heating fuel tank is available; however, a separate fuel line shall be provided.

3.8 Operation. Automatic means shall be provided for exercising generators weekly with a load equal to 80 percent of full rated load.

November 3, 1971

PBS P 3425.8

TABLE OF CONTENTS

CHAPTER 8. FIRESAFETY AND WARNING SYSTEMS

Reserved. (Pending publication of this chapter, see the HB, Building Fire Safety Criteria (PBS P 5920.9) for firesafety requirements.)

Handbook "Outline for a Federal Office Building"

Collection of Documents

W.H. McNichols Jr.
MAYOR



City and County of Denver

CITY AND COUNTY BUILDING · DENVER, COLORADO · 80202

AREA CODE 303 297-2721

February 12, 1974

Mr. Frank W. Rhea
Facilities Project Manager
United States Mint
Denver, Colorado 80202

Dear Mr. Rhea:

It is our plan, if the Park Hill site is selected for construction of the new United States Mint, to rebuild nine holes of the present golf course on an unimproved acreage lying to the southeast corner of the present golf course property. We feel that we will be able to enhance the character of the golf course and to generate a general neighborhood improvement by replacing a large area of weeds with the golf course proper. If a decision is made prior to July 1, 1974 to select the Park Hill site for the new Denver Mint, it would be possible for us to have the new nine holes ready by September 1, 1975. However, any time we could pick up in the upcoming planting season would allow us to have the new portion of the golf course in better condition when it is opened. We, of course, would welcome an earlier selection of the site if possible in order to make the best possible transition.

I believe that selection of this site for the construction of the new Denver United States Mint would have the effect of upgrading the general environmental quality of that section of our community.

Sincerely yours,

A handwritten signature in blue ink that reads "W. H. McNichols, Jr.".

W. H. McNichols, Jr.
MAYOR

Regional Transportation District

56 Steele Street
Denver, Colorado 80206
303/399-8140

3
13
16

April 24, 1974

Mr. Frank W. Rhea
Bureau of the Mint
Facilities Project Manager
Denver Mint
320 West Colfax Avenue
Denver, Colorado 80204

Dear Mr. Rhea,

Reference is made to Department of the Treasury's letter, dated March 6, 1974, requesting a review of the Draft Revised Environmental Impact Statement for the proposed new Denver Mint. The Regional Transportation District has reviewed this document and had made the following finding:

The transit implications for the two sites are different with respect to short-term and long-term public transportation plans.

The short-term public transportation plan, the Early Action Program, involves improvements to bus service for the District. The Park Hill site is currently served by existing bus service. Route 15, which serves the Park Hill site directly, is a scheduled North-South service on Colorado Boulevard interconnecting with scheduled East-West routes - 64, 28, 40, 14, 13, and 6 within a distance of about three miles. These routes service Denver's Central Business District and points east and northwest. Additionally, regional service between Boulder and the C.U. Medical Center may include a stop for the Park Hill site on its existing route. Under the Early Action Program, bus frequencies on each of the local routes will be increased. Bus frequencies for Route 15 will be improved to one bus every fifteen minutes. With increased frequencies on the interconnecting bus routes, as well, the Park Hill site will be readily accessible by transit for employees and tourists.

The Federal Center Mint site at 6th and Union is not currently served directly on a regularly scheduled basis by existing transit operations. Routes 16 and 59 serve the Federal Center directly but only for commuter service in the morning and evening. Route 16 is a North-South service on Kipling Street. Route 59 connects the Federal Center with Denver's Central Business District. Route 75 operates regularly between the West Lakewood area and Denver's Central Business District, but the west end of the line is Alameda and Garrison, approximately 1.5 miles southeast measured on a straight line from the Federal Center site.

Under the Early Action Program, Route 16 will be converted into a regularly scheduled North-South service on Kipling with thirty minute bus frequencies. As a scheduled service, Route 16 will interconnect with another East-West service, Route 84, which will operate between Golden and Denver's Central Business District also on a thirty minute frequency. Route 59 will be improved by the addition of two more bus trips in the morning and evening but it will remain a commuter service. Route 75 will be extended to the west under the Early Action Program to Alameda and Ohio resulting in a Federal Center bus stop at Alameda and Union Street. As a result of the Early Action Program, the transit accessibility of the Federal Center Mint site for employees and tourists will be improved. Route extensions and modification of bus service to serve the Federal Center Mint site are possible under the Early Action Bus Program.

The timing for the short-term transportation plan calls for the implementation of improved bus service in 1975. Because of the flexibility of bus routes and bus operations, bus service may be changed under the Early Action Program to accommodate the transit needs of either Mint location. Future improvements beyond the Early Action Program to bus operations will be accomplished in accordance with the Transit Development Plan, a five-year management and improvement plan.

The long-term public transportation plan involves the implementation of a personalized system of rapid transit on fixed guideways with a variety of levels and types of bus service to support the rapid transit system. This Personal Rapid Transit (PRT) system includes approximately 58 stations and 100 miles of guideway throughout the Regional Transportation District.

With regard to PRT service, the Park Hill site will not be directly served. The closest PRT station location to the Park Hill site will be in the vicinity of East Colfax and Colorado Boulevard, a distance of approximately 2.5 miles. The transit link between the Park Hill site and the station will be accomplished by local bus service circulating within this area. The level of bus service and frequencies in this general Northeast Denver area has not yet been determined but a high frequency of service may be anticipated for North Colorado Boulevard because of the need to serve the adjacent residential neighborhoods and type of activities located on this arterial: Phipps Auditorium, Museum of National History, City Park, school, City Park Golf Course, Park Hill Golf Course, and the industrial uses and employment locations in the I-70/Colorado Boulevard general area. The Park Hill site will be accessible from all parts of the region by rapid transit via a transfer to local buses circulating in the neighborhood.

April 24, 1974

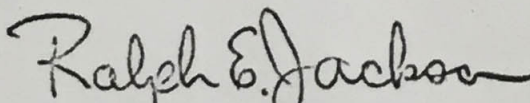
The Federal Center site will be served directly by the PRT. A station location is planned for the Federal Center in the vicinity of 6th Avenue and Union Street. Thus the Federal Center site will be directly accessible from all parts of the District via rapid transit.

The timing for the implementation of the PRT system is 1975-1983. It is anticipated that the PRT will be fully operational by the year 1983.

There are no negative environmental comments relating to transit regarding either site for the proposed mint location.

Thank you for the opportunity to review and comment upon this Draft Revised Environmental Impact Statement.

Sincerely,



Ralph E. Jackson
Director of Planning

REJ/ca

BY AUTHORITYRESOLUTION NO. 6

INTRODUCED BY

SERIES OF 1974

The Entire CouncilA RESOLUTION

URGING MINT DIRECTOR MARY
BROOKS TO KEEP THE MINT WITH-
IN THE CITY AND COUNTY OF DEN-
VER.

WHEREAS, the Denver Mint was originally established as a Federal assay office within the City and County of Denver in 1904; and

WHEREAS, the Mint began coining money in February, 1906, and has served the people of the United States in this capacity for the past 68 years, having manufactured four and one-half billion coins in 1973 alone, including denominations ranging from pennies to dollars; and

WHEREAS, the Denver Mint is one of the most popular tourist attractions in the State of Colorado, having a volume of as many as 3800 visitors a day in the summer months; and

WHEREAS, loss of the Mint to a location outside the Denver city limits would severely injure the economy of the City and County of Denver; and

WHEREAS, the Mint has occupied a prominent place in the history of the City and County of Denver for almost seven decades; and

WHEREAS, the need for a larger structure has prompted Mint officials to consider other locations for the Mint, including a site outside the city limits of the City and County of Denver; and

WHEREAS, Denver officials and citizens have urged that the new Mint be located at a site on the present Park Hill Golf Course that would fully satisfy the requirements specified for a new Mint;

NOW, THEREFORE,

BE IT RESOLVED BY THE COUNCIL OF THE CITY AND COUNTY OF DENVER:

Section 1. That the Council of the City and County of Denver, in behalf of the people of the City and County of Denver, hereby urges Mrs. Mary Brooks, Director of the Mint, to select the Park Hill Golf Course site for the location of the new Denver Mint, in order to keep the Mint within the City and County of Denver.

Section 2. That the Clerk of the City and County of Denver shall attest and affix the seal of the City and County of Denver to this resolution, and that a copy hereof be transmitted to Mrs. Mary Brooks, Director of the Mint.

PASSED by the Council

Robert Rhea President

APPROVED Frank Rhea Mayor

ATTEST: J. J. Dugan Clerk and Recorder,
Ex Officio Clerk of the
City and County of Denver

January 28, 1974

January 27, 1974

7
11

THE STATE HISTORICAL SOCIETY OF COLORADO

Colorado State Museum, 200 Fourteenth Avenue, Denver 80203

April 3, 1974

Frank W. Rhea
Bureau of the Mint
Facilities Project Manager
Denver Mint
320 West Colfax Avenue
Denver, Colorado 80204

Dear Mr. Rhea:

I have consulted the State Inventory of Historic Sites as well as the Denver Landmark Commission Inventory and there are no historic sites that would be affected in either location for the new mint. Therefore, we would have no objection to the project from this standpoint. I am forwarding the report to the State Archaeologist, Dr. Hester, who must do the required commenting and review of the archaeological resources that may or may not be concerned.

I would remind you that the old Mint is a National Register site. It is also a part of the newly designated Civic Center Denver Landmark Commission. I am sure that plans for the old building will be cognizant of these distinctions and will be respectful of them. I would hope that any plans to be made would be presented before the Denver Landmark Commission and ourselves for comment.

Sincerely,

Cynthia Emrick

Cynthia Emrick
Preservation Assistant

cc: Dr. Hester

8
11

THE STATE HISTORICAL SOCIETY OF COLORADO

Colorado State Museum, 200 Fourteenth Avenue, Denver 80203

Office of the State Archaeologist
Ketchum 5A
University of Colorado
Boulder, Colorado 80302
April 18, 1974

Frank W. Rhea
Bureau of the Mint
Facilities Project Manager
Denver Mint
320 West Colfax Avenue
Denver, Colorado 80204

Dear Mr. Rhea:

Cynthia Emrick sent a copy of the draft environmental impact statement concerning the new Denver Mint. I have read the draft and I feel no adverse effects to archaeological resources would occur at either of the two proposed sites for the new mint. Should archaeological remains be encountered during construction, this office should be immediately notified along with appropriate Federal agencies for their proper documentation and salvage.

Should this office have additional information pertaining to archaeological remains at the two alternate mint sites, we shall forward this data with our recommendations.

Sincerely,

Marvin Kay
Marvin Kay
Staff Archaeologist

cc: Cynthia Emrick

mt



DENVER REGIONAL COUNCIL OF GOVERNMENTS

1776 SOUTH JACKSON STREET, DENVER, COLORADO 80210 • 758-5166

14

April 24, 1974

Mr. Frank W. Rhea
Bureau of the Mint
Facilities Project
Denver Mint
320 West Colfax Avenue
Denver, Colorado 80204

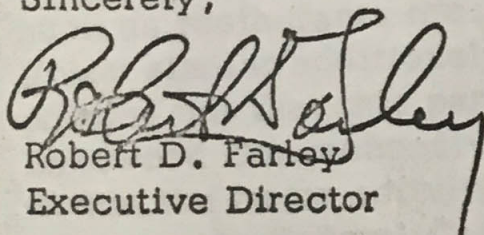
Subject: EI/001-74, Draft Environmental Statement for new Denver Mint

Dear Sir:

Reference is made to your letter and enclosure of March 6, 1974 concerning review of the Draft Environmental Impact Statement for the new Denver Mint in accordance with Section 102 (2) (c) of the National Environmental Policy Act of 1969 (Public Law 01-100). In response to your communication, the Council has reviewed the Statement as it relates to the Council of Governments' concern with areawide planning and development.

The Council of Governments appreciates this opportunity to be of service to your agency.

Sincerely,


Robert D. Farley
Executive Director

RDF/nl

Enclosure

cc: Richard Brown - Colorado Division of Planning
William H. McNichols, Jr. - Mayor of Denver
Don DeDecker - Lakewood COG Representative
Gary Latham - Lakewood Director of Community Development
Alan Canter - Denver Planning Office Director

F-45

COUNCIL OFFICERS
NORMAN A. SMITH, Chairman SAMUEL L. JENKINS, Vice Chairman GUY R. BANDERS, Secretary-Treasurer ROBERT D. FARLEY, Executive Director

EXECUTIVE COMMITTEE

JOHN P. MURPHY

JACK I. TREIBER

Excerpts from the April 5, 1974 DRCOG Regional Planning Advisory Committee Meeting:
Mr. Bigenwald, DRCOG staff reviewed the status of the EIS. At that time, it was the Committee's wish that the whole Committee should have the opportunity to review the statement.

Gary Latham, Lakewood, outlined the Lakewood staff position relative to the new U.S. Mint. The Lakewood City Council has held a public hearing relative to citizen input. A study session was also held to evaluate citizen input as well as staff comments.

Lakewood City staff commented on a number of points with regard to the Federal Center site. Mr. Latham said that there have been several mis-statements made by other agencies relative to the site. His staff identified information that could satisfy those concerns. The Federal Center site does have existing rail access which was one of the concerns in terms of bringing in supplies. Another concern expressed was relative to the traffic patterns in the area. He reviewed for the Committee plans concerning that particular area relative to the Simms-Union interchange. He pointed out that the the Colorado Division of Highways is modifying that interchange. Concern was expressed that Simms and Union themselves would not be sufficient to carry the volume of traffic being generated because of its two lane configuration. A portion of that is already under construction for six lanes.

It was also pointed out that RTD has discussed this particular area as a PRT stop which would make the facility immediately adjacent to the Mint site. Connected with that would be some tourist facilities, including small convenience shops such as restaurants etc... between the Federal Center site and Union. Across Union similar additional facilities would also be provided. Mr. Latham further pointed out that this particular proposal is in conformance with both the proposed Lakewood Comprehensive Plan and with the DRCOG Regional Plan in that it is within the major activity center located in that area. Lakewood will go on record favoring the Federal Center Site, but included within their recommendations is a request that the particular areas of concern expressed by the City of Lakewood be forwarded to the Treasury Department. Specifically the City requests that their concerns be taken into account as further impact analysis is conducted and that specific funds be allocated to the amelioration of the City's concerns, particularly during the Construction phase of the project.

Copies of an analysis by the Denver Planning Office staff review on the Draft Environmental Impact Statement of the Denver Mint were distributed to those in attendance. (A copy of this analysis is attached to and made a part of the file copy of these minutes.) Wayland Walker, of the Denver Planning Office, displayed a map and explained the environmental analysis conducted by the Denver Planning Office on the comparison of vehicle miles that would have to be travelled to each of the two proposed sites from the place of residence of the employees currently working at the Mint. Mr. Walker pointed out that vehicle miles and hence air pollutants would increase if the Lakewood site were chosen for the new Mint.

Duane Tinsley, Thornton, expressed a concern over the VMT analysis presented at this meeting, and as presented in the report. He questioned what the relationship of the additional 400 employees would be. He also said that tourist miles would likely increase at the Lakewood site.

Mr. Latham noted that in reviewing the impact statement one finds that in terms of all the areas analyzed, the difference in the actual impact is very minimal. Perhaps the VMT analysis showed the greatest variance.

Other factors should be considered: One is the Public Transportation Plan in terms of where the PRT line has been located. Secondly, in terms of the general traffic movement, the difference between the two sites may not be directly related to differences in air pollution. In other words the VMT is only directly related if the vehicles move at the same speed. The slower speeds likely at the Park Hill site might actually cause more pollution. The difference in how the cars move have a great bearing on how much pollutant is established. Thirdly, as far as new employees, he said the site that is eventually chosen for the Mint will have a great deal to do with where employees will live. Fourth, through many discussions, Lakewood has had, they have heard the concern expressed that the suburbs are not necessarily carrying their share of housing relative to lower and moderate income persons. Through the review of this proposal and of the persons who work at the Mint now, a goodly number of those people fall into the moderate category. Lakewood has adopted the allocations made by COG as being Lakewood's goals. Lakewood is in a position of finalizing programs to be able to handle this type of income level. To that degree the location of the Mint might provide an opportunity to boyh employment and housing.

Mr. Walker said that in the written comments of the Denver Planning Office they have gone into detail on several of the different areas such as housing and have listed its concerns in many of these social areas.

Ken Dell, RPAC Chairman, said that the main purpose of this review is to review the environmental impact statement on the Mint and not to make a decision as to the location of the facility and requested that comments be confined specifically to the impact statement.

Gordon Appell, DPO, said that the Denver analysis concluded that the impact statement was deficient on the analysis of social and economic conditions. From the standpoint of housing and schools, the impact statement could be strengthened to show that housing for low and moderate income individuals is provided in the City of Denver.

Mr. Tinsley, Thornton, said that in addition to the level of detail in social and economic considerations, the statement is meager on the detail provided concerning the transportation impact on the individual facilities. The report did a good job of analysis on the systems level, but did not consider in enough detail the impact it would have on arterials and intersections.

Mr. Frank Rhea, Project Manager for the Department of Treasury, was present to answer any questions. He said that part of the problem in trying to analyze the impact on the transportation system is trying to predict how people are going to get to work in 1980. Design of the Mint has not proceeded because it depends on the site that is chosen. The actual process used in the forging of the various coins is also tied up because of proposed legislation to change the penny to aluminum, which is affecting strip production. He said that in actuality, the Mint feels there will be only a very small additional traffic load, because of the different work shifts, employees will be coming to work at different times during the day.

DRCOG Staff Comments: The Council of Governments staff has reviewed the Draft Environmental Impact Statement prepared by the Bureau of the Mint, Department of the Treasury, regarding the Construction of New United States Mint, Denver, Colorado. The Draft Statement considers the impact of two alternative sites (1) the northwest corner of the Park Hill Golf Course in Denver and (2) the northwest corner of the Denver Federal Center in Lakewood. The Mint would consist of 700,000 square feet of gross building space and auxiliary service area totaling 30 acres.

In general, the impact statement has covered most of the salient points regarding the environmental impact of the two sites. However, there appears to be a lack of discussion concerning the social impact of the location of the facility on either of the sites. Analysis is undertaken concerning how the alternative sites might effect the relocation of employee housing over time; however, the actual impact of the facility on the social and economic structure of the surrounding community was not addressed in detail.

There is also some question as to the comparative VMT estimates for the alternative sites. The analysis of the "center of gravity chosen, are two questions that could be asked. Results of the 1971 JRPP origin and destination study suggest the average work trip length for the region was about seven miles. One could argue that over time the average employee trip would not be based on a center of gravity concept but would approach the regional average of seven miles, hence, the VMT for both sites may actually be 6,300 Vehicle Miles of Travel. (7 miles X 900 trips). (April 12, 1974)

It was moved by Mr. Appell, Denver, that the RPAC accept the staff comments with the addition of the comments reflected in the minutes that have been made at the meeting both -- written and oral. The motion was seconded by Gary Latham and passed unanimously. (April 12, 1974).

UNITED STATES OF AMERICA
GENERAL SERVICES ADMINISTRATION

Region 8
Denver Federal Center
Denver, CO 80225



17
18

APR 24 1974

Mr. Frank Rhea
Facilities Project Manager
U. S. Mint
320 West Colfax Avenue
Denver, CO 80204

Dear Frank:

Thank you for the opportunity to comment on your February 24, 1974, Draft Environmental Impact Statement in which the Park Hill Golf Course and Denver Federal Center sites are discussed.

The Draft appears to be a factual statement which adequately covers the subject matters to be considered in the selection of a site for a major facility such as the new Denver Mint.

It is this agency's opinion that either of the two sites under consideration would make an excellent site for the new Mint.

As the agency with the contracting authority for the design and construction of a new Mint, I would like to take this opportunity to assure all interested parties that we intend to fully comply with all Federal and State clean air and environmental quality anti-pollution standards. This will be accomplished with the utilization of the most modern and efficient pollution control and prevention systems available for the production process and the support facilities.

Energy conservation is, and will continue to be, of prime consideration in all our projects, including the new Denver Mint. GSA has recently published a document entitled, "Energy Conservation Design Guidelines for Office Buildings" which will serve as a valuable guide to the design Architect-Engineer for the new Mint.

The primary source of fuel at the Denver Federal Center central steam plant is natural gas with No. 2 fuel oil and coal being used as standby fuels. Due to the energy shortage experienced in early 1973, GSA converted both of the existing convertible boilers to facilitate the burning of coal. The third existing boiler cannot be converted to coal use. Subsequent to the conversion of the boilers to permit the use of coal, they were tested by the Air Pollution Control Division of the Colorado Department of Health and found to be in compliance with Federal and State emission standards while using coal as a source of fuel. While burning natural gas or fuel oil, we were in compliance

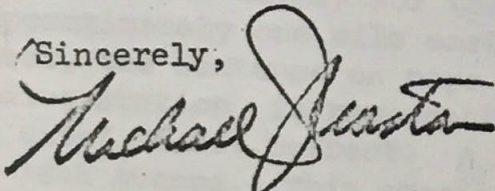
with Federal and State clean air standards. We have discontinued the use of coal as a standby fuel at the Denver Federal Center until necessary equipment changes are made which will insure compliance with emission standards.

To correct the present emission problem and to insure that proper consideration is given to our immediate and long range energy conservation efforts, we have contracted with a consulting firm to conduct a detailed engineering feasibility study including the pre-engineering design of necessary corrective measures to assure compliance with Federal and State emission standards. The study will be complete in about 90 days at which time we will evaluate our entire problem from the fuel availability, energy consumption and emission control standpoints. Present and estimated future requirements of the Denver Federal Center, including possible new Mint requirements, are being considered in this study.

The existing boiler capacity at the Denver Federal Center is adequate to handle the estimated load of the new Mint. The present emission problem will be corrected far in advance of the new Mint coming to the Denver Federal Center, should the DFC site be selected.

I trust these comments and those received from other interested parties will permit an early site selection so that this project may proceed without further delay.

Sincerely,

A handwritten signature in dark ink, appearing to read "Michael J. Norton". The signature is fluid and cursive, with a large, stylized initial "M".

MICHAEL J. NORTON
Regional Administrator



COLORADO DEPARTMENT OF HEALTH

4210 EAST 11TH AVENUE • DENVER, COLORADO 80220 • PHONE 388-6111
Edward G. Dreyfus, M.D., M.P.H., Executive Director

April 18, 1974

Mr. Frank Rhea
Facilities Project Manager
Denver Mint
320 West Colfax Avenue
Denver, Colorado 80204

Dear Mr. Rhea:

A review of the New United States Mint Draft Revised Environmental Impact Statement has been completed by the Air Pollution Control Division of this Department. The Impact Statement discusses two proposed sites, the NW corner of the Park Hill Golf Course and the NW corner of the Denver Federal Center.

The air quality data supplied in the Impact Statement presented, for 1970, an annual geometric mean for suspended particulate matter of 60.3 ug/m^3 (micrograms per cubic meter) for the Lakewood site (see Attachment A). The station is approximately one mile east of the Denver Federal Center proposed mint site. However, the sentence on page 14 of the Statement, "The School Administration Building Station is representative of air quality conditions at the proposed Park Hill site" is not correct. A much closer station is the Hull Photo site at 5105 East 38th Avenue. This station is approximately one mile from the proposed Park Hill Mint site. The annual geometric mean, for 1970, of suspended particulate matter from the Hull Photo station was 79.6 ug/m^3 . If the 1972 recorded and 1973 projected levels of suspended particulate matter are considered (see Attachment B), there is not much difference between the two sites; therefore we feel both sites are about comparable considering only this one pollutant. However, the major automobile-caused pollutants (i.e., carbon monoxide and photochemical oxidants) presently exceed Federal ambient air quality standards on numerous occasions over large portions of the Denver area. With limited air quality data for these pollutants at the two proposed mint sites, pollutant problems can be reduced by locating the mint where vehicle traffic can be minimized.

The Impact Statement devotes several pages to the volume and impact of the induced vehicle miles traveled (VMT) of either site. Based on projections of 1973 vehicle usage at the existing Denver Mint, the Park Hill site should generate 1800 VMT less daily net average than the Denver Federal Center site. On the other hand, the average daily traffic (ADT) counts of the roadways adjacent to both sites indicate 7600 less vehicles at the Denver Federal Center site.

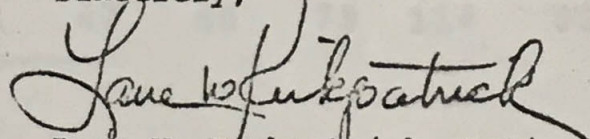
The Department has great concern for the Park Hill area, because it falls within the boundary established by both the Department of Health and the Environmental Protection Agency to demonstrate the adequacy of transportation control strategies to attain and maintain the National Ambient Air Quality Standard for hydrocarbons by mid-1977. To reach that standard at the Park Hill site, there must be a reduction in vehicle miles traveled (VMT) in the described area (see Attachment C). No new source of generated VMT could be tolerated within the area without a corresponding reduction of VMT from another source, or unless motor vehicle emission control technology is improved beyond that presently considered possible.

The final point to be made is the availability of public transportation to both sites in 1980 and thereafter. The Regional Transportation District has proposed the NW corner of the Denver Federal Center as a terminus for the rapid transit system (completion date, 1984). The terminus is to be virtually adjacent to the proposed Mint site. The Park Hill site, on the other hand, would be served by bus, with the closest transfer point about two miles from the rapid transit network.

The analysis of existing air quality, meteorological conditions, and the impact of vehicle usage and pollutants generated by the two sites upon the projected ambient air, supports the conclusions stated on page 15 of the Statement, "...it is considered that the net adverse impact on air quality would be less with the new Mint located at the Federal Center."

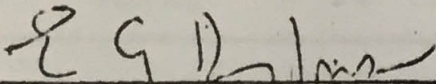
This is the only official statement to date from the Department of Health regarding the air quality impact of the relocation of the Denver Mint.

Sincerely,



Lane W. Kirkpatrick, Acting Director
Air Pollution Control Division

Reviewed by:

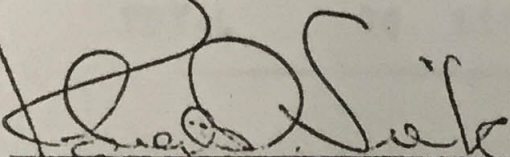


Edward G. Dreyfus, M.D., M.P.H.
Executive Director
Colorado Department of Health

Date

April 19, 1974

Reviewed by:



Robert D. Siek, M.P.H.
Coordinator, Environmental Programs

Date

April 19, 1974

COLORADO DEPARTMENT OF HEALTH
AIR POLLUTION CONTROL DIVISION

STATISTICAL ANALYSIS OF AMBIENT AIR QUALITY DATA
POLLUTANT: SUSPENDED PARTICULATES
UNIT: MICROGRAMS PER CUBIC METER
YEAR: 1970

METRO DENVER REGION

STATION TOTALS FOR REGION 2

STATION	QTR	NUM SMP	ARIT MEAN	MIN/MAX	10	LOG-N 30	DIST. 50	-N 70	90	GEO MEAN	STD DEV
126001											
LAKEWOOD	1	24	80	30/211	37	55	71	92	135	71.0	1.65
	2	27	67	15/149	31	45	59	78	115	59.3	1.68
	3	24	55	21/168	25	37	48	63	92	48.4	1.66
	4	20	70	30/109	41	54	66	80	105	65.8	1.44
TOTAL		95	68	15/211	32	47	60	78	114	60.3	1.64
50006											
HULL PHOTO	1	25	103	26/213	52	74	94	119	169	93.8	1.58
	2	25	79	34/166	47	62	74	90	118	74.4	1.44
	3	24	77	23/187	40	56	70	80	123	70.0	1.55
	4	20	91	32/175	45	64	82	105	150	82.3	1.60
TOTAL		94	87	23/213	45	63	80	100	140	79.6	1.55
50001											
SCHOOL AD. BLDG.	1	23	149	74/255	91	118	141	209	219	141.2	1.41
	2	24	100	66/181	66	82	96	112	141	96.0	1.35
	3	23	98	40/109	56	75	92	112	150	91.7	1.47
	4	20	122	43/229	62	83	112	142	201	111.9	1.58
TOTAL		90	117	40/255	65	88	108	134	181	108.3	1.50

DESCRIPTION OF TRANSPORTATION
AND LAND USE CONTROL PLAN
DEMONSTRATION AREAS

Carbon monoxide:

An area bounded by Larimer Street on the northwest, 20th Street and 20th Avenue on the north, Logan Street on the East, 13th on the south, and Speer Boulevard on the west.

Hydrocarbons:

An area bounded by the corner of West 6th Avenue and Federal Boulevard, north to the intersection of West 29th Avenue, then east on West 29th Avenue to the intersection of Zuni Street, then north to the intersection of West 38th Avenue, then east to Interstate 25, then north to the intersection of Interstate 70, then east to the intersection of Holly Street, then south to the intersection of East 38th Avenue, then west to the intersection of Colorado Boulevard, then south to the intersection of East 29th Avenue, then west to the intersection of York Street, then south to the intersection of East 6th Avenue, then west to Federal Boulevard.

ATTACHMENT C

SUMMARY OF SUSPENDED PARTICULATE DATA

	<u>Annual</u>	<u>Geometric</u>	<u>Mean</u>	<u>(ug/m³)</u>
	<u>1970</u>	<u>1971</u>	<u>1972</u>	<u>1973</u>
Lakewood	60.3	71.0	71.0	72.0*
Hull Photo	79.6	84.0	74.0	78.0*

* projected

Colorado State Health Department Document
on Denver Air Quality Control Region Air
Quality Measurements, December 18, 1973

Footnote 20

121

EMISSION REDUCTIONS REQUIRED

1971 was the base year for the purpose of determining the emission reductions required during the development of the implementation plan for the State of Colorado. The only monitoring station in Denver continuously recording carbon monoxide, total oxidants, and nitrogen oxides during 1971 was the downtown Denver CAMP station located at 21st and Broadway. The emission reduction required for carbon monoxide was determined by use of the "roll-back" technique. The emission reduction required for hydrocarbons to achieve the photochemical oxidant standard was determined using the relationship expressed in Appendix J of the Federal Register (August 14, 1971, p. 15502). The calculations submitted in the implementation plan are as follows:

Carbon monoxide: (8-hour period)

Data period = January 1 - December 31, 1971

Second highest 8-hour average = 24.7 ppm

National standard = 9 ppm, 8-hour average

Percent reduction in CO emissions required to achieve the 9 ppm standard = 64%

$$\frac{A-C}{A-B} \times 100 = \text{Percent reduction needed}$$

Where:

A = Existing air quality at the location having the highest measured concentration in the region.

B = Background concentration

C = National standard

A = 24.7 ppm, B = 0 ppm, C = 9 ppm

$$\frac{A-C}{A-B} \times 100 = \frac{24.7-9}{24.7-0} \times 100 = 64\%$$

Carbon monoxide: (1-hour period)

Data period = January 1 - December 31, 1971

Second highest 1-hour CO average = 51 ppm

National standard = 35 ppm, 1-hour average

Percent reduction in CO emissions required to achieve the 35 ppm standard = 31%.

$$\frac{A-C}{A-B} \times 100 = \frac{51-35}{51-0} \times 100 = 31\%$$

Hydrocarbons

Data period = January 1 - December 31, 1971

Second highest 1-hour oxidant average = .18 ppm

National standard = .08 ppm

Percent reduction in hydrocarbon emission required to achieve the national standard (.08 ppm) for oxidants = 60%.

Percent reduction required taken from the Federal Register, (August 14, 1971, p. 15502, Appendix J).

Nitrogen dioxide

Denver AQCR classified priority III

CAMP STATION CHARACTERISTICS

The EPA-owned Denver CAMP station has been operated in Denver since 1965 under the terms of a cooperative project agreement. It has been a valuable resource to the EPA and to the State of Colorado for the purpose of assessing the magnitude of the air pollution problem in Denver. Although the station has been of value, serious questions should be raised in regard to the potential of the station to make representative measurements of several pollutants.

The station is situated in the middle of a traffic island bounded by Champa, Broadway, and 21st. The sampling intake is approximately 15 feet above ground level. Horizontal distances to street curb are 20 feet, 30 feet, and 45 feet for Broadway, Champa, and 21st, respectively. Since the station is near dense, slow-moving traffic, the highest 1-hour oxidant levels are not likely to occur in this area. Motor vehicles are known to emit nitric oxide in significant quantity and nitric oxide is known to consume ozone. Oxidant (ozone) measurements would be more representative if they were made several miles downwind of the central business district during the ozone season. The same reasoning holds true for nitrogen dioxide since it is considered to be more a secondary pollutant than a primary stationary-source pollutant. In the case of carbon monoxide, the area in the vicinity of the CAMP station probably is representative of maximum carbon monoxide concentrations in the city. It should be noted, however, that there are currently two ambient air standards for carbon monoxide. The first is a 1-hour standard of 35 ppm not to be exceeded more than once a year. The second is an 8-hour standard of 9 ppm not to be exceeded more than once a year. At any given location, the 8-hour standard would probably be more difficult to meet. This is the case in regard to the CAMP station since violations of the 8-hour standard required a 64% reduction in CO emissions while violations of the 1-hour standard required only a 31% reduction.

SAMPLING LOCATION CRITERIA

The Environmental Protection Agency has recently published sampling location guidelines for installing air monitoring instruments.¹ Of particular note are guidelines for carbon monoxide, oxidants, and nitrogen dioxide. They are as follows:

<u>Pollutant</u>	<u>Station location</u>
CO (1-hr. avg.)	Representing area containing dense, slow-moving traffic, obstructions to air flow (tall buildings), and pedestrian population, such as a major downtown traffic intersection (< 20 feet from street curb).
CO (8-hr. avg.)	Representing area of high traffic density in residential area, such as major thoroughfare in central city or suburban area (< 50 feet from street curb).
O ₃	Representing residential area downwind of downtown area (5 to 15 miles from downtown and > 300 ft. from major traffic arteries or parking areas).
NO ₂	Representing residential area downwind of downtown area (< 5 miles from downtown).

It is important to note that the site criteria for the 1-hour CO standard and the 8-hour CO standard are not necessarily met by the same monitoring station. The

Denver CAMP station meets the guideline for the 1-hour standard but possibly not the guideline for the 8-hour standard. The CAMP station would not seem to represent an area of high traffic density in a residential area. Although there are a number of dwellings in the general vicinity, it would be extremely difficult to classify what would seem to be a commercial area as generally residential. Another consideration should be an evaluation of the likelihood of significant public exposure to the high carbon monoxide levels measured at the CAMP station over a full 8-hour period.

In regard to oxidants and nitrogen dioxide, the CAMP station location is such that measurements made there would not be representative of probable maximum pollutant concentrations in the Denver AQCR.

EXAMINATION OF CARBON MONOXIDE EXPOSURE

Ott and Eliassen² have discussed the use of air quality data in relation to problems associated with carbon monoxide monitoring. One important use of air quality data is in support of scientific research investigations. An assumption in such investigations appears to be that data from an urban air monitoring station is "representative" of air quality in a large physical area surrounding the station. Ott's study has shown that air monitoring stations give drastically different results when moved only a block or two. These findings would seem to apply to Denver as well as San Jose. Information obtained from other monitoring stations in Denver with different site characteristics is useful in determining what is really "representative" for Denver.

Another use of monitoring data is to assess the impact of control efforts on long-term air quality trends. The CAMP station would be of value in this regard since it is the oldest operative station. Problems may still arise in trend evaluation if CO levels fall as merely a result of reductions in traffic on streets adjacent to the station while concentrations over the city remain about the same.

Probably the most important use of air quality data is in the implementation of national air quality standards in accordance with the 1970 Clean Air Act. Under existing federal policies, these standards, which apply in air quality control regions throughout the United States, are concentrations which "are not to be exceeded more than once a year" in the "ambient air" which is defined as "that portion of the atmosphere, external to buildings, to which the public has access."³

Ott has shown that the San Jose monitoring station underestimates the CO concentrations experienced by pedestrians on downtown First Street in San Jose and overestimates concentrations present at locations randomly distributed throughout a 13-square-mile survey grid. Data collected at several points in and around Denver show that CO concentrations are overestimated by the downtown CAMP station. Data does not as yet exist as to whether or not the downtown station underestimates the CO concentrations experienced by pedestrians. It should be noted that the new CO monitoring stations are not as traffic-oriented as the downtown station. It is clear that results from any single station will not serve to answer all questions in regard to carbon monoxide air quality.

Number of Violations
of the 1-hour 35ppm carbon monoxide standard by station
(Highest single concentration shown in parentheses)

Don Fred Carter

STATION MONTH	CAMP	NAT'L. JEWISH	OVERLAND	CARIH
January, 1973	5 (43)	ND	ND	ND
February, 1973	0 (33)	0 (27)	ND	ND
March, 1973	0 (23)	0 (20)	0 (10)	ND
April, 1973	0 (19)	0 (18)	0 (12)	0 (8)
May, 1973	0 (18)	0 (15)	0 (10)	0 (14)
June, 1973	0 (20)	0 (12)	0 (7)	0 (12)

Number of Violations
of the 8-hour 9 ppm carbon monoxide standard by station
(Highest single concentration shown in parentheses)

Don Fred Carter

STATION MONTH	CAMP	NAT'L. JEWISH	OVERLAND	CARIH
January, 1973	262 (32)	ND	ND	ND
February, 1973	141 (17)	58 (13)	ND	ND
March, 1973	42 (14)	7 (11)	0 (6)	ND
April, 1973	30 (11)	0 (8)	0 (8)	0 (6)
May, 1973	5 (10)	0 (8)	0 (7)	0 (7)
June, 1973	3 (10)	0 (8)	0 (5)	0 (5)

EXAMINATION OF OZONE EXPOSURE

Little or no ozone data was obtained in Denver during 1971. Total oxidant data was used to determine the degree of hydrocarbon control considered necessary. As previously mentioned, the second highest oxidant value of .18 ppm, measured at the Denver CAMP station, required a 60% reduction in hydrocarbon emissions. The CAMP station has always been traffic oriented and it would be reasonable to assume that ozone (or oxidant) levels would be higher in areas less influenced by nearby traffic. The data obtained to date has shown this assumption to be correct. The State started collecting ozone data in July of 1973 at five stations. The second highest measured

ozone concentration was .25 ppm for a one hour period. This level was measured in Arvada, Colorado on August 13, 1973. Using the same relationship referenced in the State Implementation Plan for determining hydrocarbon emission reductions required, it has been found that an 80% reduction in hydrocarbon emissions will be required. Violations of the ozone standard do not appear to be events peculiar to any one area in the region. It would seem that ozone is fairly evenly distributed, provided that the monitoring station is not biased by nearby traffic. Based on the limited data available at this time, it appears that the ozone "season" may be quite short. This trend is evident in the decreasing number of violations as ambient temperatures fall. It may be possible to institute emission control measures on a seasonal basis since hydrocarbon emissions during the winter months may be of little significance in the formation of ozone. Unfortunately, control of mobile sources requires control of both hydrocarbons and carbon monoxide. During the winter months when ozone levels appear lowest, carbon monoxide levels have historically been highest.

Number of Violations
of the 1-hour .08 ppm ozone standard by station
(Highest single concentration shown in parentheses)

Parkhill *Don Fed C.* *Don Fed C.*

STATION MONTH	NAT'L. JEWISH	OVERLAND	CARIH	ARVADA	WELBY
July, 1973	6 (.14)	ND	ND	ND	14 * (.11)
August, 1973	44 (.16)	15 (.17)	36 (.27)	35 * (.26)	49 (.17)
September, 1973	5 (.10)	9 (.12)	ND	18 (.15)	9 (.14)
October, 1973	0 (.07)	2 (.10)	ND	4 (.13)	0 (.08)

Parkhill

Highest ozone level observed = .27

Second highest ozone level observed = .25

*Less than a full month of data

ND = no data

EXAMINATION OF NITROGEN DIOXIDE EXPOSURE

The Denver Air Quality Control Region is currently priority III for control of nitrogen dioxide. The Denver AQCR is one of several AQCR's around the country where available data would indicate that the region is borderline between a priority I classification and a priority III classification.⁴ There has been considerable controversy in regard to analytical methods in use nationally. The two continuous methods being proposed by the EPA for future work could very possibly show that Denver deserves a priority I classification in which case control measures will be developed. Station siting is also important in regard to nitrogen dioxide measurements. Mobile source emissions are predominately in the form of nitric oxide. Peak nitrogen dioxide concentrations would be expected downwind of the downtown area after a sufficient time for oxidation has elapsed.

CONCLUSIONS

1. Relatively few people would be exposed to the high carbon monoxide levels observed at the Denver CAMP station for a full eight hours. Use of the eight hour data from this station alone does not appear advisable for implementation planning.

2. Ozone measurements have shown that needed hydrocarbon emission reductions are greater than had been anticipated. An 80% reduction has been determined based on recent measurements in residential areas.
3. Nitrogen dioxide may suddenly receive renewed attention upon region reclassification.

REFERENCES

1. Guidelines of Technical Services of a State Air Pollution Control Agency, Environmental Protection Agency, Contract No. 68-02-0211 (1972)
2. W. Ott and R. Eliassen, "A Survey Technique for Determining the Representativeness of Urban Air Monitoring Stations with Respect to Carbon Monoxide", Journal of the Air Pollution Control Association 23:685 (1973)
3. "National Primary and Secondary Air Quality Standards", Federal Register 36(84): 8186 (April 30, 1971)
4. "Reference Method for Determination of Nitrogen Dioxide," Federal Register 38 (110): 15174 (June 8, 1973)

STATION LOCATIONS AND CHARACTERISTICS

1. Welby - 78th and Steele
Welby, Colorado

SAROAD Classification: Suburban - Industrial
Elevation of sampler above ground: 15 feet
Distance from sampler to Steele: 45 feet

2. Arvada - West 57th and Garrison
Arvada, Colorado

SAROAD Classification: Suburban - Residential
Elevation of sampler above ground: 15 feet
Distance from sampler to 57th: 55 feet

3. CARIH - 2095 Julian
Denver, Colorado

SAROAD Classification: Suburban - Residential
Elevation of sampler above ground: 15 feet
Distance from sampler to 21st: 50 feet

4. National Jewish - East Colfax and Colorado Boulevard
Denver, Colorado

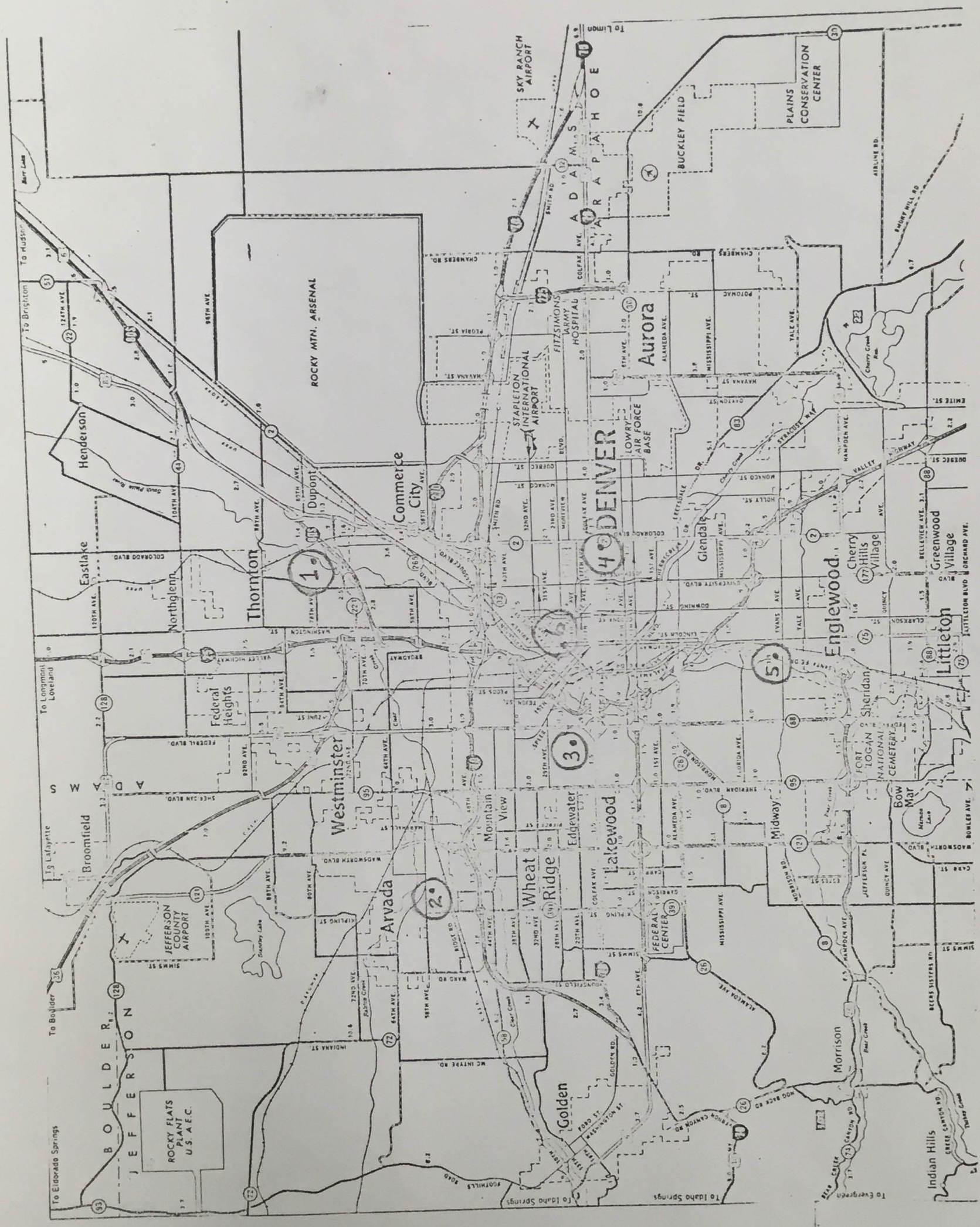
SAROAD Classification: Center city - Commercial
Elevation of sampler above ground: 30 feet
Distance from sampler to Colorado Boulevard: 30 feet

5. Overland - 2005 South Huron
Denver, Colorado

SAROAD Classification: Suburban - Residential
Elevation of sampler above ground: 15 feet
Distance from sampler to Huron: 65 feet

6. CAMP - 2105 Broadway
Denver, Colorado

SAROAD Classification: Center City - Commercial
Elevation of sampler above ground: 15 feet
Distance from sampler to Broadway: 20 feet





UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION VIII
1860 LINCOLN STREET
DENVER, COLORADO 80203

MAY 6 1974

Mr. Frank W. Rhea
Bureau of the Mint
Facilities Project Manager
Denver Mint
320 West Colfax Avenue
Denver, Colorado 80204

Dear Mr. Rhea:

The Region VIII Office of the Environmental Protection Agency has reviewed the draft environmental impact statement for the construction of the new United States Mint.

In general, the statement adequately addresses the alternatives and impacts of the proposed project. We would like to offer comments on several issues involved with determining the environmental impacts of this project.

A. Air Quality Impacts and the Denver Transportation Control Plan

EPA's principal concern with vehicle-miles per day traffic (VMT) and on-site emissions with either of the proposed Mint site alternatives involves how such a decision at one or another site will affect the attainment of air quality standards as proposed in the transportation control plan (TCP) for the Denver Air Quality Control Region.

The TCP does call for a reduction of VMT in the Denver area in order to meet these standards. How these reductions are to be applied to a specific case such as the Mint has not been fully examined. While incremental VMT increases might in some cases be permitted, EPA would expect that such increases be offset by mitigating measures such as improved traffic flows, increases mass transit use, etc. It is thus important to develop some estimate of the overall impact on air quality for each site with and without the initiation of such mitigation measures.

The techniques used in analysis of VMT increases in the environmental impact statement are reasonable for assessing impacts on air quality in the light of the current state of the art. We do feel that a number of other factors should be considered in assessing air quality impacts at one or both sites.

1. The EIS calculates net increases in VMT at both sites from Mint commute traffic. The analysis should be expanded to include the impact of visitor traffic to the Mint as well.

2. Because traffic to the Denver Federal Center site would be counter flow to the peak morning and evening rush hour traffic, a net increase in traffic speed could be possible. Whether an actual decrease in emissions would occur could only be determined by a computer simulation of the changes in the entire metropolitan highway system.

3. Most of the emissions from this Mint-related VMT will occur outside of the immediate site areas, whichever is chosen.

4. The specific site locations at the Federal Center or the Park Hill site might result in changes to and from the present transportation modes, including bus transit, bicycle or pedestrian modes. These changes could add to or subtract from the projected VMT values in the EIS. The effect of improved mass transit could also result in transportation mode shifts.

5. Some residential relocation is projected in the EIS for each of the sites. These moves would also affect the VMT emissions. The differential housing markets in Lakewood and Denver as mentioned in the EIS might help or hinder such relocations.

An exhaustive analysis of the ultimate air quality impacts occurring from either site would involve complex modeling and estimates of decisions about housing relocation and transportation use that may or may not occur. EPA feels that at this point, the relative merits of one site versus another from an air quality standpoint are unclear. There are further complications involved in determining where the VMT reductions should occur that make it difficult to single out one or another site.

If carbon monoxide is the air pollution parameter of concern, then reducing VMT in the downtown area, even with some increase in the outlying urban areas, could result in a decrease in the maximum observed concentrations. This would be a beneficial transportation technique for meeting air quality standards.

However, recent evidence indicates that control of oxidants may be more critical for the Denver area. Recent sampling data suggests that oxidants may be dispersed relatively uniformly over the Denver metropolitan area. If this is the case, a control of overall VMT

related emissions becomes more important than spatial distribution of these emissions.

The state of the art for predicting air quality impacts is not well-enough defined at this point in time, to be able to set hard and fast rules about how VMT sources are to be controlled. Diffusion models for oxidants have only been recently developed and tested. EPA will continue to press for better predictive techniques and will recommend predictive procedures when better techniques become available.

It should be remembered that the transportation control plan is a continuing process. Better predictive techniques, annual air quality sampling information and assessments of how well the technological improvement to automobiles (retro-fit devices, high altitude modification, etc.) are working, will vary likely result in changes in strategy of how the air quality goals are to be met.

It should also be emphasized, however, that VMT reductions may continue to be required in the Denver area to meet standards. In this situation, the Denver mint traffic would be expected to bear a proportionate share of the decrease in VMT.

The value of this NEPA review is to anticipate such a situation of VMT reduction requirements, to avoid unnecessary VMT increases if possible, and to explore possible mitigating measures that would allow a VMT decrease.

The EIS has suggested to its credit a number of possible TCP alternatives to the present VMT projection, namely increased mass transit and staggered working hours. EPA feels that the mass transit alternative in particular needs close attention. The Treasury Department should attempt to assess what the effect on current transportation modes-walking, bicycling mass transit, etc will be at each of the two sites, perhaps by an employee survey. The questions asked should also include how many employees could utilize available or improved mass transit as well as those who would do so at present. The Treasury Department in turn should work closely with the Regional Transportation District to provide for the best available mass transportation. The final EIS should indicate what mass transportation will be available when the new Mint begins operation at either site. In particular, this assessment should focus on the likelihood of such mass transportation at each site.

The EIS should also estimate what reduction in peak from VMT could be expected if staggered work hours were to be introduced at the Mint.

The final EIS should also factor visitor traffic into its VMT calculations, for the analysis they have developed.

B. AQCR Demonstration Areas

The statement on page 15 that certain reductions of emissions are required in the "demonstration areas" is not strictly correct; the reductions are required throughout the Denver Air Quality Control Region (AQCR).

The demonstration area was only utilized as a tool to determine amounts of reduction in emissions necessary throughout the AQCR. As such it has no legal standing. Both Mint sites are inside the AQCR and are subject to exactly the same air quality standards.

C. Water Quality

No quantitative information was available in the EIS on projected water uses at the new Mint. The EIS mentions that no discharge will occur from the cooling processes, but we take this to mean no discharge to a waterway. Certainly recycled cooling water will have to be diluted with make-up water, and salt concentration will have to be limited by periodic flushing of cooling water into the sanitary sewer system.

The EIS should address the amounts of water to be used, pollution treatment, and expected amounts of discharge from all operations to the sanitary system. Existing collection sewer facilities should be checked at their respective sites, to insure that there is adequate capacity to handle the projected flows.

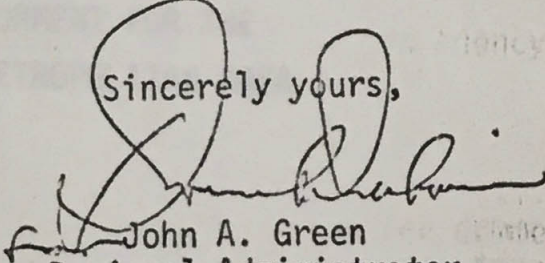
Further, an estimate should be made of the amounts of all waterborne pollutants to be discharged from the Mint to the sewage facility. This is important to insure that incompatible pollutants are kept from reaching the biological treatment processes.

In view of the comments you have received concerning air quality from the Colorado Department of Health, we would be receptive to discussing the air quality issue with you and the State at any time.

I hope that these comments will aid in the preparation of the final EIS. According to the category system developed by EPA for evaluating environmental impact statements, we have rated this project LO-2. We feel that additional information should be included in the final EIS. A copy of our rating system is included for your information.

Please send us a copy of the final statement.

Sincerely yours,


John A. Green
Regional Administrator

24

TRANSPORTATION CONTROL STRATEGY
DEVELOPMENT FOR THE
DENVER METROPOLITAN AREA

Contract No. 68-02-0048
Task Order 11

December 1972

Prepared For
Environmental Protection Agency
Research Triangle Park, N.C.

Prepared By
TRW Transportation & Environmental Operations
Environmental Services
7600 Colshire Drive
McLean, Virginia 22101

TRAVEL FORECASTS

In 1970, the Colorado Department of Highways prepared summaries of the total vehicle miles of travel per day for the Denver Region. These data were coded for use in the Six Cities Studies being carried out for Denver and five other metropolitan areas for the Environmental Protection Agency. These summaries were prepared by analysis zone for an average day in 1969. The 1969 summaries were prepared from the program of volume counts made by the Highway Department in that year. At that same time, forecasts of 1990 vehicle miles of travel on an average day were made utilizing travel assignment 1990 origin and other forecasts techniques.

The 1969 and 1990 travel forecasts were distributed by the Consultants to a square-mile grid system which encompassed 625 square miles of the Denver region (See Figure B-1). The area of the grid corresponds approximately to earlier areas defined for transportation and urban planning studies. The area included all of the City and County of Denver and parts of Adams, Arapaho, and Jefferson Counties. The travel distributions were used in air pollution modeling in connection with the Six Cities Studies. For the current studies, it was necessary to update the 1969 data to 1971 travel volumes and then expand them to 1977, the target year. The 625 square mile area was subdivided into control areas to obtain separate totals of travel rules for Denver, and the segments of Adams, Arapaho, and Jefferson Counties included.

In addition a 12 square mile analysis area within the City of Denver was defined as the "Central Area". This 12 square mile area is four miles in height and three miles in width. It lies to the south of 52nd Avenue, one-half mile north of FAI 70 and to the east of FAI 25 as far as Colorado Boulevard.

A three square mile critical analysis area within the Central Area was defined as the "Core". The three square miles encompass the district bounded by Laramir Street on the northwest, 20th Street and 20th Avenue on the north, Logan Street on the east, 13th Avenue on the south, and Speed Boulevard on the west, traditionally defined as the Central Business District in earlier studies.

In 1971 another comprehensive volume count program was undertaken in the Denver region. Data from this program served as the basis for updating the vehicles miles of travel in the 12 square mile Central Area and the three square mile Core Area.

For the remainder of the City of Denver and the other three counties, 1971 vehicle miles of travel were determined by expansion of the 1969 travel summaries. Volumes in 1965, 1969, and 1971 from the counting program were compared across various screen lines. On the basis of these comparisons, it was determined that the growth rate over the two years had been approximately three percent per year compounded for the City of Denver, five percent per year for Arapaho and Adams Counties and approximately six percent per year for Jefferson County.

The resulting total increase in the vehicle miles of travel within the 625 square mile area was from 10.0 million vehicle miles of travel on an average day in 1969 to 11.4 million vehicle miles of travel on an average day in 1971.

The same screen line analyses were used as a basis for determining future growth rates to 1977. It is estimated that there will be approximately 14,700,000 vehicle miles of travel on an average day in 1977 in the 625 square mile area.

A summary of the 1971 and estimated 1977 vehicle miles of travel for the five major analysis zones in the Denver Metropolitan Area are shown in the table below.

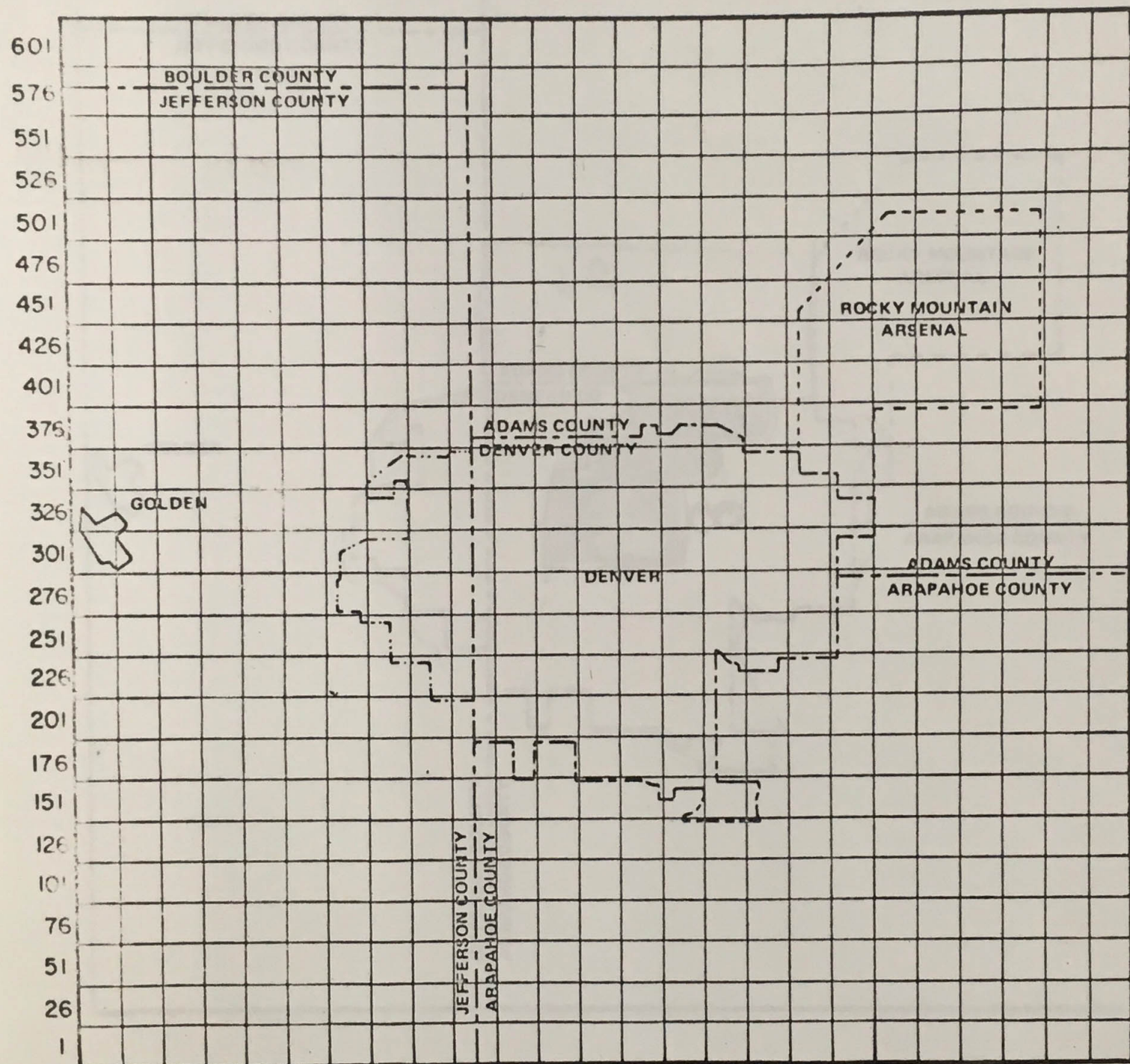


Figure B-1 Denver Grid



Public Service Company of Colorado

P.O. BOX 840 · DENVER, COLORADO 80201

February 11, 1974

Mr. Frank Rhea
Project Engineer
U. S. Mint
West Colfax Ave & Delaware Street
Denver, Colorado

Dear Mr. Rhea:

In response to your inquiry concerning the availability of dual circuit 115 kv primary electric service for the proposed U.S. Mint we are able to state that this service can be made available at either the Park Hill location or at the Denver Federal Center. We understand that the initial load is to be about 35000 kw with an ultimate load of 50,000 kw.

As we discussed by telephone on January 15, to provide dual circuit service to either site will require transmission line construction. The engineering required to determine the costs involved will take about three weeks. We will begin engineering studies as soon as we are notified as to which site has been tentatively selected.

When the engineering study is complete, our management will determine the costs, if any, which will be chargeable to the Bureau of the Mint.

If you have any questions, please call me at 571-7629.

Sincerely,

Lee Comstock
Supervisor

Lighting and
Special Services

LC/mp



DEPARTMENT OF HOUSING AND URBAN DEVELOPMENT
FEDERAL BUILDING, 19TH AND STOUT STREETS
DENVER, COLORADO 80202

May 3, 1974

REGION VIII

IN REPLY REFER TO:

8D/M

Mr. Frank W. Rhea
Facilities Project Manager
Bureau of the Mint
Department of the Treasury
Denver, Colorado 80202

Dear Mr. Rhea:

This is in response to your letter dated March 6, 1974, which requested our comments on the Revised Draft Environmental Impact Statement for relocation of the Denver Mint.

As you know, the Department of Housing and Urban Development is primarily concerned with (1) the effects of a proposed action on the urban environment and (2) the compatibility of the action with the comprehensive planning for the area. Assessing these considerations, this office believes that several impacts, resulting from relocation of the Denver Mint out of Denver, would run counter to the continued efforts of Federal agencies to stimulate and renew the core city which serves as the sustaining element for the entire Denver Standard Metropolitan Statistical Area (SMSA).

HUD has invested approximately \$80 million for Community Development with the goal of arresting blight, stabilizing neighborhoods and providing a decent living environment within the city and county of Denver. We are most concerned that other Federal agencies take actions which protect and enhance this substantial investment.

Illustrative of the magnitude of HUD's investment are several projects located in close proximity to the Park Hill site (i.e., within the two-five mile commuting area referred to on pages 9 and 10 of the statement).

The projects are summarized as follows:

Whittier Urban Renewal

In the 29 block Whittier Urban Renewal Project in Northeast Denver, HUD spent \$2.9 million. An additional \$1.9 in public improvements was financed by the city of Denver and Denver Urban Renewal Authority.

Residents of the area spent almost \$1 million for home improvements for some 658 units of housing and 67 units of Federal Housing Administration (FHA) 221(d)3 rent supplement were created.

Mitchell

The Mitchell Urban Renewal Project, bounded generally by portions of East 29th and East 28th Avenue, Lafayette Street, 32nd Avenue and High Street is immediately northeast of the Whittier Urban Renewal Project. The Mitchell Project, covering 19-1/2 blocks is, likewise, a neighborhood rehabilitation program with some clearance and housing redevelopment. HUD financing amounts to \$5.4 million and some 335 homes are being rehabilitated.

Russell Park

The Russell Park Project, located between 31st and 25th Avenue, Humboldt and York, is a residential rehabilitation program covering 25-1/2 blocks. There are 327 homes scheduled for improvement with a \$1.3 million loan pool for below-market interest rate loans made available through cooperation of five major banks in Denver. The HUD share of the project is \$3,906,656.

Eastside

Eastside Neighborhood Development Program area, bounded by East 20th Avenue, Washington Street and Glenarm, will be redeveloped with nearly 450 units of low and moderate income housing. HUD has provided \$6 million to carry out this residential redevelopment activity. Regional transportation district plans call for a rapid transit line not far from the south border of the project, giving residents in the project access to public transportation to all parts of the Denver area.

Blake Street

Not all HUD assistance in northeast Denver has been for residential purposes. The Blake Street Project, located between 33rd Street and 40th Street on Denver's near north side, provided for removal of severely blighted residential structures for industrial and commercial redevelopment. Total HUD financing was \$1.7 million.

Other Significant HUD Projects affecting Northeast Denver

Money allocated to Denver as a result of HUD Model Cities supplemental funds and funds appropriated through state, city, Federal, and

private sources in the four years, 1970 - 1974, are as follows:

HUD	\$ 24,564,000
State of Colorado	633,000
City of Denver	12,132,000
Other Federal	80,411,000
Private	<u>1,123,000</u>
TOTAL	\$ 118,863,000

(Source: Urban Resources Development Agency Annual Report, 1973)

Recently completed was the Federally-assisted code enforcement, FACE program, to which HUD committed \$7,187,625. Rehabilitation loans and grants through December 31, 1973, totaled an additional \$4,466,348.

The city and county of Denver has received substantial funds for planning efforts under the Section 701 Comprehensive Planning Program and the Community Renewal Program. The recently completed Community Renewal Program (CRP) received funding of \$1 million and the current 701 annual allocation is \$256,000. In addition, HUD's existing community development financing in Denver, not limited to the Northeast area, is sizeable:

Eastside, College View NDP	\$ 6,654,000
Mitchell UR	5,390,608
Skyline UR	33,002,887
Auraria UR	15,672,065
Russell Park UR	3,906,661
Five Points Neighborhood Facility	500,000
Westwood Neighborhood Facility	300,000
Water/Sewer	090,000
Open Space	<u>1,145,000</u>
TOTAL	\$ 67,480,221

The city's contribution to community development has been from 33-1/3 percent to 50 percent to match the above grants. These, of course, will not include millions of dollars in private investment; for example, \$140 million in the Skyline Project as of April 1, 1974.

All of these programs have been aimed at improving the integrity and cohesiveness of Denver's Neighborhood and commercial areas, as well as encouraging other private and public financing to this end. Essential to the maintenance of these efforts is a supportive economic base offering employment opportunities to the residents of the city, as well as providing much-needed revenue to the city of Denver via property and sales taxes.

Employment

The core city provides a ready source of prospective employees for the facility expansion. According to the Denver Community Renewal Program publication of December 1972, the Northeast Park Hill area, itself, represents one of the largest employment sources in the city. The neighborhoods of highest unemployment concentration lie "in a concentric ring around the Central Business District (CBD) with extensions to the north, east and south." Most of these neighborhoods are situated immediately west of Colorado Boulevard between the proposed site and the CBD. This same area is burdened by an unemployment percentage ranging between 2.1 and 4.7, in excess of the city norm of 1.8 percent.

The increased job opportunities which would be provided by expansion of the Mint may help to alleviate unemployment of this area. The limited accessibility of the facility, if moved to Lakewood, would create an additional obstacle to employment of core residents and might well add to unemployment in the core by reducing job opportunities and leaving the present minority employees behind.

Social, Cultural and Educational Considerations

The relocation of the Denver Mint to the proposed Denver site would permit the present employees to conveniently remain at their current residences with little disruption of their personal activities. The 41 percent of the present employees who are minority have existing ethnic ties within the city which could be maintained. In addition, the core area offers health and social services far superior to those provided in Lakewood, particularly for present and future low and moderate income employees. Included among these services are the private and charity health services of the Denver General Hospital, the most modern and complete facility in the Rocky Mountain area. Also, established offices of city, county and state social service agencies are conveniently located within the core area, as well as such other licensing and regulatory agencies as the State Revenue Department Drivers License Office. The city plans to open branch offices of city and social services in the Five-Points Neighborhood Facility complex.

We also would like to point out that superior cultural facilities are located in the core area, such as the Botanic Gardens, museums, Denver Zoo, and performing arts facilities. It is also important that the major educational facilities are located in the core area; University of Colorado, Denver Center, Metro State College, Community College, Denver University, and Emily Griffith Opportunity School.

Metro State, soon to be a part of the Auraria educational complex, has since its inception been geared toward providing education for the under-employed and persons who are unable to attend college full time. Several of the institutions offer night classes and courses to upgrade skills for nondegree as well as degree oriented students. We believe that the convenient location of all of these facilities is important not only to the employees but also to their dependents.

From the socioeconomic standpoint, a potentially beneficial impact is that of the opportunity for minority entrepreneurship which would be available for service businesses related to Mint employees as well as tourists, in particular, economic opportunities for restaurants, gas stations, etc.

Economic Impact

If the facility were to be relocated out of Denver, the loss to the city and county of the current \$5 million annual payroll and an increased future payroll would be significant, as would be the loss of tax base from those employees who would follow their employment out of the city.

The loss of sales tax revenues and the Occupational Privilege Tax would further weaken the financial position of the city and county of Denver. The city and county of Denver is bearing the financial burden of providing facilities such as the zoo, parks, museums, etc. that are used by the citizens of the entire Metro area. That fact was recognized by the State Legislature in their appropriation of approximately \$11 million to the city and county of Denver. Any Federal action which may be taken to alleviate the inequities in the burdens of financing and maintaining these areawide facilities should receive serious consideration.

While the relocation of the Mint out of the CBD to either site will no doubt diminish tourism generated by conventions, the closer proximity and accessibility of the proposed Denver site is likely to encourage more convention-generated tourism than would the Lakewood site. Locating the Mint at the proposed Denver site would place it near the Denver Zoo and the Museum of Natural History in City Park, thus clustering major tourist attractions conveniently between the CBD and Stapleton International Airport.

Transportation

Locating the new Mint at the proposed Denver site would place the facility within greater proximity to the residences of present employees thus minimize the commuting distance between employee's residences and their place of employment. It should also be considered that automobile pollutants would be less for employees commuting to and from the proposed Denver site than to and from the Lakewood site.

As indicated on pages 9 and 10, 84 percent of the present employees live within a ten mile radius of the proposed Denver site, while only 53 percent live within a ten mile radius of the Lakewood site.

The statement further indicates that the net anticipated vehicle miles traveled (VMT) by present employees from current residences would be an estimated 1,800 vehicle miles fewer per day to the proposed Denver site than to the Lakewood site.

On pages 10 and 11 of the statement, it is pointed out that the Lakewood site, which has no Denver Metro Bus service, has been planned for Personal Rapid Transit (PRT) service. Considering that the new Mint is anticipated to be ready by 1980 and that completion of the PRT is not expected until 1982, it appears that employees could well be faced with a two year transportation void.

On the other hand the proposed Denver site is currently served by Denver Metro Buses which would be immediately convenient for employees and tourists traveling to that site.

While the Denver site has not been scheduled for direct PRT service, the Citizen Action Committees for PRT are only now in the process of determining route alignments and station locations. A station could easily be planned for the proposed Denver site if the need were indicated. This would make the Denver site even more accessible than it now is in comparison with the other proposed site.

Conclusions

Relocation of the Denver Mint to either of the proposed sites would be consistent with planning for the subject areas. However, it is the position of this Department that from the standpoint of long term, areawide comprehensive planning and community development goals, the serious impacts which we have elaborated above clearly indicate that the proposed Denver site would be far superior to that of the alternate proposal.

We have enclosed a copy of the U. S. Department of Housing and Urban Development market analysis for the two sites, which was previously sent to you on April 16, 1974, in compliance with Executive Order 11512. Also enclosed are copies of letters from two Model Cities Geographic Area Committees in support of the proposed Denver site and a location map indicating the location of Federally subsidized housing and another map showing HUD sponsored renewal projects in the city and county of Denver.

We appreciate this opportunity to provide our comments pertaining to the relocation of the Denver Mint. If you have any questions regarding these remarks, or if we may be of any further assistance, please contact this office.

Sincerely,

for Doughty Moore

Robert C. Rosenheim
Regional Administrator

Page 111

Federal Center

The Section 715 units and the Federal Center are all designed for family occupancy. Most of the Park Hill units, about half of the low-cost units and 25 percent of the Section 236 units are occupied by families.

The following table shows the sales price distribution in each area for sales units available for sale in February 1974:

Sales Price	Northeast District	Central Jefferson Co.
\$0 - \$12,999	242	18
\$13,000 - \$19,999	821	18
\$20,000 - \$29,999	731	22
\$30,000 - \$39,999	142	107
\$40,000 - \$49,999	118	201
\$50,000 - \$59,999	61	72
\$60,000 & over	28	148
	1,003	586
Median	\$20,000	\$19,000

The following table shows the rental range of new apartments in each area:

Sales Price	Park Hill	Federal Center
1 bedroom	\$120 - \$135	\$115 - \$125
2 bedrooms	\$135 - \$155	\$125 - \$135
3 bedrooms	NA	\$135 - \$155

The Department of Housing and Urban Development's comments on proposed sites for the new United States Mint are in accordance with Executive Order 11512. These comments are presented in two parts. Part one concerns the availability of low and moderate-income housing, and part two concerns the availability of housing on a nondiscriminatory basis.

Part I

Federally subsidized housing primarily serves two income groups. The low rent or rent supplement programs serve low-income households (i.e., a four-person family with gross annual income under \$7,000). The Section 236 Program serves moderate income households (i. e., a four-person family with gross annual income between \$5,000 and \$9,200). The following table shows the approximate number of these units within four miles of each site:

<u>Site</u>	<u>Low Rent</u>	<u>Section 236</u>
Park Hill	2,050	1,550
Federal Center	0	96

The Section 236 units near the Federal Center are all designed for family occupancy. Near the Park Hill site, about half of the low-rent units and 25 percent of the Section 236 units are occupied by families.

The following table shows the sales price distribution in each area for existing units available for sale in February 1974:

<u>Sales Price</u>	<u>Northeast Denver</u>	<u>Central Jefferson Co. & South Lakewood</u>
\$ 000 - \$15,000	24%	1%
\$15,000 - \$19,000	22%	1%
\$20,000 - \$24,999	23%	5%
\$25,000 - \$29,999	14%	12%
\$30,000 - \$39,999	11%	38%
\$40,000 - \$49,999	4%	25%
\$50,000 & Over	2%	18%
	100%	100%
Median	\$20,000	\$39,000

The following table shows the rental ranges of most apartments in each area:

<u>Unit Size</u>	<u>Park Hill</u>	<u>Federal Center</u>
1 Bedroom	\$120 - \$135	\$145 - \$165
2 Bedrooms	\$155 - \$185	\$170 - \$210
3 Bedrooms	NA	\$220 - \$260

It should be noted that there are few apartments in the vicinity of Park Hill. There are apartments in Commerce City and Aurora, but the rents on the units in Aurora would be similar to those in Lakewood. There are also a large number of apartments in east central Denver, and the rents in these units range from some of the least expensive to some of the most expensive in the Denver area. The apartments in Lakewood are primarily under 10 years old and are more homogenous than those accessible to Park Hill. Consequently, there are few units in Lakewood at the lower end of the above price ranges.

In general, the immediate vicinity of the Federal Center contains more available apartment units than Park Hill, but their rent is significantly higher.

The following table shows the sales price distribution for new homes completed last year in Denver and Jefferson Counties:

<u>Sales Price</u>	<u>Denver</u>	<u>Jefferson</u>
\$ 0 - \$15,000	0%	0%
\$15,000 - \$19,999	3%	2%
\$20,000 - \$24,999	71%	17%
\$25,000 - \$29,999	22%	29%
\$30,000 - \$39,999	3%	35%
\$40,000 - \$49,999	0%	14%
\$50,000 & Over	1%	3%
	100%	100%
Median	\$21,700	\$30,500

This distribution, again, shows substantially higher prices in Jefferson County than in Denver. However, there is much more activity in Jefferson County. Last year there were about 4,100 homes completed in Jefferson County and only about 400 completed in Denver.

The distribution of salaries of Mint employees indicates that 12 percent make between \$7,000 and \$9,000, and 70 percent make between \$9,000 and \$12,000. None of the employees make less than \$7,000 and only 18 percent make more than \$12,000. This indicates that none of these employees would be eligible for Federally subsidized low-rent housing, and only about 12 percent would be eligible for Section 236 units. Including this latter category, most of the employees could afford a \$15,000 to \$30,000 house or a monthly rent of \$150 to \$250. There are rental units in both areas within this

range; however, most of the units in Lakewood are in the upper portion of the range. The existing unit sales price distribution indicates that 59 percent of the units in Park Hill and 18 percent of the units in Lakewood are within the above price range.

In summary, the cost of housing in Lakewood is significantly higher than in Park Hill. Although the absolute prices and salaries will be somewhat different by the time the Mint is completed, we can expect that the relative differences will be comparable to the current situation. In general, the production levels and housing availability are greater in Lakewood. However, most of the housing is beyond the means of most Mint employees. Conversely, the availability of housing in Park Hill is more limited, but the cost of this housing is much more modest. At present, the Park Hill site would provide a much greater opportunity for moderate income employees to move close to work.

However, there remains somewhat of a paradox. One site (Park Hill) is near modest-cost housing, but little of it is available or being produced; the other site (Federal Center) is near areas of substantial housing production, but little of this is for moderate-income families. Therefore, we anticipate that the selection of either site will require the formulation of some sort of plan to assure the availability of moderate-price housing. We recommend that you contact us when construction of the Mint is underway. At that time, we will update our figures on the housing market and advise you as to what Federal and local resources might be utilized in the area to provide housing for moderate-income families.

Part II

Comments regarding availability of housing on a nondiscriminatory basis in relation to the proposed construction of the new United States Mint in either Park Hill or Lakewood:

1970 Population Statistics from the United States Census:

Denver, Colorado - Total Population	514,678
Black Population	47,011
Spanish Surnamed Population	86,345
Other Minorities	9,480
Lakewood, Colorado Total Population	92,787
Black Population	130
Spanish Surnamed Population	4,360
Other Minorities	670

acial Breakdown of Employees of the U. S. Mint as of June 30, 1973:

Total Employment	461
Black Employees	45
Spanish Surnamed Employees	137
Oriental Employees	8

Since a fairly sizable number of present employees belong to minority groups, it can be presumed that a good number of minority-group families and individuals would be in the market for housing as new or present Mint employees.

In addition to the Federal Fair Housing Law, i. e., Title VIII of the 1968 Civil Rights Act, the state of Colorado also has a strong Fair Housing Law. The state law is administered by the Colorado Civil Rights Commission. At the present time most housing discrimination complaints in the state of Colorado are processed by the Colorado Commission on Civil Rights.

In the period from January 1973 to March 1974, the Colorado Commission processed 69 housing discrimination complaints in Denver and 2 complaints in Lakewood. The cases were handled as follows:

- 31 complaints in Denver were closed by conference (successfully);
- 38 complaints in Denver are under active investigation;
- 1 complaint in Lakewood was closed by conference (successfully);
- 1 complaint in Lakewood is still active.

During the same period, the Equal Opportunity Office of the Department of Housing and Urban Development processed 14 housing discrimination complaints in Denver and 4 in Lakewood. The cases were handled as follows:

- 4 complaints in Denver were closed by a determination not to resolve (insufficient evidence);
- 4 complaints in Denver were closed by successful conciliation agreements;
- 1 complaint in Denver was withdrawn by the complainant;
- 1 complaint in Denver was dismissed for lack of jurisdiction;
- 4 complaints in Denver are still active;
- 4 complaints in Lakewood - determination not to resolve (insufficient evidence).

It can be noted that the existence of a far greater number of complaints in the city of Denver, as compared to the city of Lakewood, does not necessarily indicate a lack of housing available on a nondiscriminatory basis within the city of Denver. As the general population statistics show, there are many more minority-group people residing within the city of

and, therefore, seeking housing within Denver; so it is not surprising that there would be more complaints. There is a relatively small minority population in Lakewood, and there has been no real incentive for the movement of minorities to Lakewood.

It is well known that there is a shortage of both low and moderate-income housing within the Denver Metropolitan Area. This shortage is certainly present both within the city of Denver and within the city of Lakewood. Both Denver and Lakewood have been active in attempts to increase the amount of low and moderate-income housing available to citizens. For many years the city of Denver has actively participated in the programs of HUD designed to subsidize housing for low and moderate-income families. While the city of Lakewood has not participated to any significant extent in the production of subsidized housing within the city, the present posture of the city administration is in favor of increasing the amount of low and moderate-income housing in the community. There has been some citizen opposition to these efforts to increase low and moderate-income housing, but the city has been moving ahead.

Both Denver and Lakewood have officially subscribed to the Fair Share Housing Plan of Metropolitan Denver. Both cities have officially endorsed the plan and committed their respective communities to increasing the number of low and moderate-income housing units. The Regional Office of the Department of Housing and Urban Development has also endorsed the Fair Share Plan and has committed itself to take into account the requirements of the Fair Share Plan in the allocation of whatever subsidized units become available to the Region.

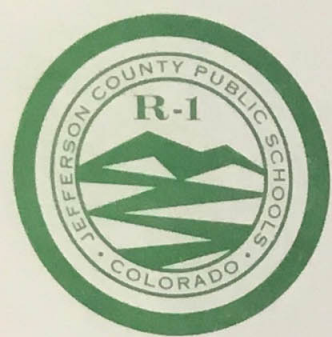
Housing marketed through the Federal Housing Administration of HUD is also bound to the requirements of HUD's Affirmative Fair Housing Marketing Program. This means that builders and developers who are seeking FHA insurance or subsidies must agree in a formal written plan to market their housing in such a way that the availability of this housing is made to be known to all members of the community and especially to those groups, generally minority groups, who would ordinarily not be attracted to the housing because it was not in an area where they traditionally lived. This Affirmative Fair Housing Marketing can be a significant tool in assisting minority-group families and individuals to find housing.

The Federal Housing Administration of HUD, together with the Home Builders in Metropolitan Denver, are working on a voluntary area-wide Affirmative Marketing Plan which would include not only housing insured or subsidized by the Federal Government, but also conventionally financed housing. This agreement would apply to subsidized, Federally insured and conventionally

anced housing. Thus, we can anticipate that most new housing in the Denver area would be marketed on the basis of an Affirmative Fair Housing Marketing Program specifically designed to open all housing to all segments of the community and especially to assure minority-group home seekers that housing is available to them.

It seems that if there are significant barriers for minority-group people seeking housing either within Denver or Lakewood, these barriers relate more to the availability of housing within the income limits of the home seeker rather than the barrier of discriminatory housing practices. While the minority-group home seeker might encounter discrimination either within the city of Denver or the city of Lakewood, it seems that this discrimination would be more of an isolated instance rather than a significant organized barrier. Both the city of Lakewood and the city of Denver have taken stands in support of increased numbers of moderate income housing units and stands in favor of equal rights for all citizens. The Denver Home Builders Association through its commitment to the principles of Affirmative Fair Housing Marketing also supports a program of marketing housing on an equal opportunity basis.

The Regional Office of the Department of Housing and Urban Development will be pleased to work with the Bureau of the Mint and the officials of the city in which the new facility will be located to increase the amount of moderate-income housing available in the area.



JEFFERSON COUNTY PUBLIC SCHOOLS
809 QUAIL STREET / LAKEWOOD, COLORADO 80215 / (303) 237-6971

May 16, 1974

Frank Rhea
Denver Mint
320 West Colfax Avenue
Denver, Colorado 80204

Dear Mr. Rhea:

This letter will reaffirm our telephone conversation of May 10, 1974 concerning the student load impact on the Jefferson County School District if the Mint were to be relocated to the Denver Federal Center.

Based on the assumption that, because of relocation of the Mint to the Federal Center, 400 employees moved to Jefferson County, we could anticipate the following:

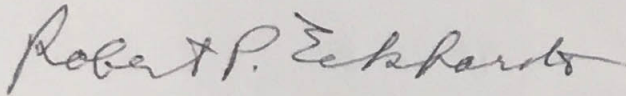
400	employees
x 2.5	persons/employee
1000	total population
x 27%	ratio of school enrollment to total population
270	students

Enrollment as of April 30, 1974 in the Jefferson County School District was 75,467 students. The District has a permanent classroom capacity for 81,082 children. Attached are tabulations showing enrollment and capacities of all the schools in the District. A map showing the location of schools is also included. It will be found, that most of the elementary schools in the vicinity of the Federal Center, have available spaces. Most of the secondary schools in the same area are operating very close to capacity.

We are submitting a bond issue to the electorate on June 4, 1974 which will provide additional spaces for the over-crowded schools in the rapidly growing areas of Jefferson County. A copy of the projects proposed to be constructed is also included.

I hope this information helps you in your assessment of the impact the relocation of the Denver Mint to the Federal Center would have on the Jefferson County School District.

Sincerely,

A handwritten signature in cursive script, reading "Robert P. Eckhardt". The signature is written in dark ink and is positioned above the typed name.

Robert P. Eckhardt
Senior Planner

RPE:ff
Enc.

QUESTION 1

Arvada-Arvada West-Pomona Area High School	1250 expand to 1500 students	\$5,394,838 *
Mountain Area High School	750 expand to 1000 students	3,564,540
Jefferson Area Junior High	750 expand to 1000 students	2,818,877 *
Lakewood Area Junior High	750 expand to 1000 students	2,818,877 *
Golden Area Junior High	750 expand to 1000 students	2,717,034
Pomona Area Junior High	750 expand to 1000 students	2,863,371 *
West Lakewood-Green Mtn. Area Junior High	750 expand to 1000 students	2,863,371 *
Addition-Drake Junior High	150 students	286,520
Addition-North Arvada Junior High	150 students	286,520
Addition-Ken Caryl Junior High	200 students	545,000
Addition-Foothills Elementary	162 students	238,000
Addition-Johnson Elementary	353 students	636,050
Addition-Parmalee Elementary	82 students	192,366
Apple Meadows (North Golden) Satellite	189 students	218,656
Metro Youth Center		310,000
55 Relocatable Classroom for replacement		1,100,000
134 Educationally Handicapped Classrooms		3,311,500
Addition-Miller Special Education School		166,540
Arvada-Arvada West-Pomona Area Elementary	650 student spaces	1,264,616
Columbine-Bear Creek Area Elementary	650 student spaces	1,264,616
Mountain Area Elementary	650 student spaces	1,336,078
Everitt Junior Tech-Voc Addition		100,000
Carmody Junior Tech-Voc Addition		100,000
Juchem Elementary Addition	250 student spaces	490,000
Lawrence Remodeling		466,440
Contingency		<u>596,190</u>
		\$35,950,000

* Budgets for these projects have been calculated for full size schools. However, with the current rapid rate of inflation in the construction industry, the scope of these projects may have to be reduced in order to complete the projects within the budget amounts.

QUESTION 2

Special Schools for the Retarded

\$ 3,300,000

QUESTION 3

Indoor Swimming Pools - 3 high schools

\$ 1,400,000

JEFFCO CLASSROOMS
FOR TOMORROW'S LEADERS

FACT SHEET - BOND 8

- I. VOTER APPROVAL DATE: June 4, 1974
- II. VOTER QUALIFICATIONS:
1. U. S. Citizen
 2. Eighteen (18) years or older by June 4, 1974
 3. Resident of Colorado and of Precinct for 32 days prior to June 4, 1974
 4. Registered by May 3, 1974
 5. Property or Non-property owner
- III. ENROLLMENT STATISTICS:
1. 76,191 students enrolled in September 1973
 2. 80,314 students anticipated by September 1976
 3. Growth - 4,123 students
- IV. PURPOSE OF CONSTRUCTION PROGRAM:
1. To provide new classroom spaces in the growth areas of ARVADA/POMONA, ARVADA WEST, BEAR CREEK/COLUMBINE, GREEN MOUNTAIN, GOLDEN AND MOUNTAINS.
 2. To upgrade facilities through renovation and replacement in the ARVADA, BEAR CREEK, GOLDEN, JEFFERSON, LAKEWOOD AND WHEAT RIDGE AREAS.
 3. To extend services available for the educationally handicapped within the regular school program and provide special schools for the retarded.
 4. To begin a swimming pool construction program which will enable the district to provide swimming instruction for students plus recreational swimming for the community.
- V. SCOPE OF THE BUILDING PROGRAM:

QUESTION #1

1. TWO HIGH SCHOOLS - \$8,959,378 -- Approval will provide a new high school in the NORTHWEST ARVADA area for 1,250 students which can be expanded to serve 1,500 students, and a new high school in the MOUNTAIN area for 750 students which can be expanded to serve 1,000 students.
2. FIVE JUNIOR HIGH SCHOOLS - \$14,081,530 -- Approval will provide five junior high schools each of which will have core facilities for 1,000 students and a minimum of 750 classroom spaces which can be expanded to 1,000 if construction bids are favorable. Three of the new junior high schools will replace educationally obsolete and/or structurally unsound facilities in the GOLDEN, JEFFERSON AND LAKEWOOD AREAS. Two of the new buildings will provide needed new spaces in the growth areas of POMONA AND GREEN MOUNTAIN/WEST LAKEWOOD.

3. ELEMENTARY SCHOOL SPACES - \$3,865,310 -- Approval will enable the district to respond to elementary age population growth by providing 650 spaces in the ARVADA/ARVADA WEST/POMONA AREA, 650 spaces in the BEAR CREEK/COLUMBINE AREA, and 650 spaces in the MOUNTAIN AREA.
4. FIVE JUNIOR HIGH SCHOOL ADDITIONS - \$1,318,040 -- Approval will provide 150 additional spaces at DRAKE JUNIOR HIGH, 150 additional spaces at NORTH ARVADA JUNIOR HIGH, 200 additional spaces at KEN CARYL JUNIOR HIGH, and tech-voc additions at EVERITT AND CARMODY JUNIOR HIGH SCHOOLS.
5. FOUR ELEMENTARY SCHOOL ADDITIONS - \$1,556,416 -- Approval will provide 162 new spaces at FOOTHILLS ELEMENTARY, 353 new spaces at JOHNSON ELEMENTARY, 82 new spaces at PARMALEE ELEMENTARY, and 250 new spaces at JUCHEM ELEMENTARY.
6. APPLE MEADOWS (NORTH GOLDEN) SATELLITE - \$218,656 -- Approval will provide neighborhood facilities for the students who live in this sub-division. Children are now being bussed to Mitchell Elementary in Golden and Kyffin Elementary on West 6th Avenue.
7. MILLER SPECIAL EDUCATION SCHOOL ADDITION - \$166,540 -- Approval will provide additional spaces for multiple-handicapped students. Included in the addition will be space for an expanded physical therapy program and vocational program.
8. LAWRENCE ELEMENTARY REMODELING - \$466,440 -- Approval will provide the necessary funds to remodel and refurbish this school which has been serving children in the Arvada Area since the early 1900's.
9. 134 EDUCATIONALLY HANDICAPPED CLASSROOMS - \$3,311,500 -- Approval will enable the District to provide classrooms at various schools throughout the County as required for implementation of the STATE EDUCATIONALLY HANDICAPPED ACT.
10. METRO YOUTH CENTER - \$310,000 -- Approval will allow the district to relocate the Metro Youth Center at the present Belmont Junior High School. Additional shop facilities will be added to meet program requirements. The present Metro Youth Center is located in Temporary Buildings on the site of the new Jefferson Area Junior High School.
11. 55 RELOCATABLE CLASSROOMS FOR REPLACEMENT - \$1,100,000 -- Approval will allow the District to replace some of the most dilapidated World War II barracks which are being used as temporary classrooms. There will be a continuing need for quality relocatables to serve schools of all levels during their peak enrollment periods.

QUESTION #2

SPECIAL SCHOOLS FOR THE RETARDED - \$3,300,000 -- Approval will permit the School District to participate with other governmental agencies to provide educational facilities for JEFFERSON COUNTY'S handicapped children and young adults who have measurable IQ's of approximately 50 and below, and who live at home with their parents. These children and young adults are not served directly by the School District. Program direction is provided by the Jefferson County Community Center Board which has the legal responsibility for providing services but no authority to levy a tax for construction of facilities.

QUESTION #3

INDOOR SWIMMING POOLS - THREE HIGH SCHOOLS - \$1,400,000 -- Approval will provide funds for the construction of three indoor pools to be located on a high school site in the Northern, Central, and Southern parts of the School District. These facilities will enable the district to begin an instructional swimming program for students of all grade levels plus making the pools available for community recreational swimming.

VI. TYPE OF CONSTRUCTION:

The District will utilize modern construction concepts to obtain the desired educational space as economically and as rapidly as possible. Buildings will be designed to provide any desired combination of self-contained and open-space instructional areas. All buildings will meet all State Industrial Commission Building Code Requirements.

VII. SOURCE OF FUNDS:

Question #1 - General Obligation Bonds for Classroom Space ---	\$35,950,000
Question #2 - General Obligation Bonds for Specials	
Schools for the Retarded -----	\$ 3,300,000
Question #3 - General Obligation Bonds for Indoor	
Swimming Pools -----	<u>\$ 1,400,000</u>
Total -----	\$40,650,000

VIII. WHAT APPROVAL MEANS:

1. Needed new spaces will be provided in the growth areas.
2. Students living in areas now served by inadequate facilities will have new or renovated facilities in the near future.
3. Appropriate facilities will be provided for the educationally handicapped.
4. A swimming instructional program will be available in the schools plus a recreational swimming program for community members of all ages.

IX. THE ALTERNATIVE:

1. A continued and growing shortage of space in growth areas.
2. A continuation of inadequate facilities in the established areas.
3. An inability to meet the needs of the educationally handicapped or to expand educational services to our young people.

X. COST TO THE TAXPAYER:

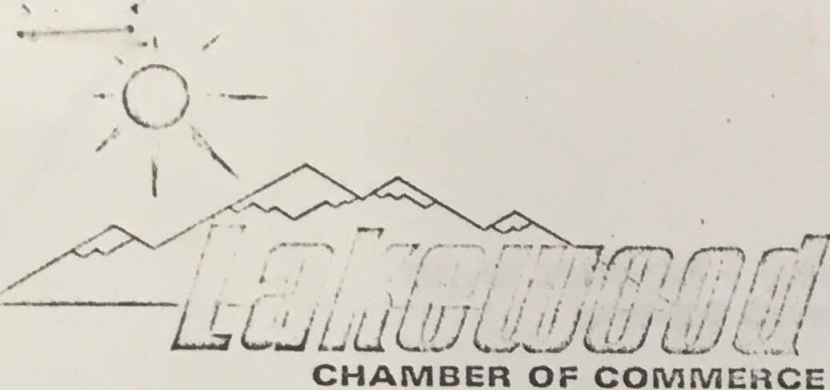
Approval of the proposed building program will require a minimal additional tax levy for payment of principal and interest in 1975 over the present 8.5 mills. In the foreseeable future the maximum increase should not exceed 2 mills for a total of 10.5 mills for debt retirement.

1. As an example if you own a house valued at \$20,000 there will be a minimal tax increase in 1975. The maximum increase in the future would be \$12.00 per year or \$1.00 per month to provide needed facilities for our young people.
2. The maximum increased cost for property owners resulting from this building program is listed below:

<u>Value of Home</u>	<u>Assessed Valuation</u>	<u>Annual Cost 2 Mills</u>	<u>Monthly Cost 2 Mills</u>
\$ 20,000	\$ 6,000	\$ 12.00	\$ 1.00
30,000	9,000	18.00	1.50
40,000	12,000	24.00	2.00
50,000	15,000	30.00	2.50

3. A maximum 2 mill increase to provide the proposed facilities is a good investment - especially when it follows a 25.25 mill reduction in the total School District mill levy for 1974--a reduction which represents a one-third cut in taxes for school purposes.

NOTES



55 Wadsworth Blvd. • Lakewood, Colorado 80226 • Phone (303) 233-5555

April 15, 1974

Mr. Frank W. Rhea
Denver Mint
320 W. Colfax Ave
Denver, Colorado 80204

Dear Mr. Rhea:

The Lakewood Chamber of Commerce has received a copy of the Environmental Impact Statement on the proposed re-location of the Denver Mint. This document has been thoroughly studied by a special Chamber Task Force. The comments contained in this letter have been prepared by the Task Force and approved by our Board of Directors.

Our organization, as the following statement indicates, fully supports the re-location of the Mint to the Federal Center, and we pledge our full cooperation to you in making such a move. We represent more than 625 business and professional firms in this area.

The attached statement was prepared in response to the Environmental Impact Statement, with comments added regarding the potential social and economic impact on the community. It was presented at a meeting of the Lakewood City Council, but we also wish to have it recorded among the statements you are collecting on this issue.

Thank you for your consideration.

Sincerely,

John C. Bowers
Executive Vice President

JCB/as
Encl.

April 1, 1974

POLICY STATEMENT - UNITED STATES MINT LOCATION
LAKEWOOD CHAMBER OF COMMERCE

The Lakewood Chamber of Commerce, through its U. S. Mint Task Force, has carefully reviewed all available information regarding the possible location of the United States Mint at the Federal Center in Lakewood.

It is the opinion of the Task Force and the Chamber's Board of Directors that the positive factors involved in relocating the Mint in Lakewood far outweigh the negative factors.

The Environmental Impact Statement prepared by the Bureau of the Mint indicates that this location would have little or no adverse impact on the environment of our community. The statement makes the following points:

- I. Locating the Mint in the Federal Center would be consistent with land use plans of the City of Lakewood and the Denver Regional Council of Governments. We quote from page 8, "It is believed, on balance, that locating the new Mint at this proposed site would be a beneficial land use in conformance with plans, policies and controls for the affected area.
- II. Mint employee traffic generally would be counterdirectional to the mass of rush-hour traffic movements, which would result in a minimum impact on traffic congestion in the area. Widening of Union Street to six lanes should result in an overall decrease in peak-hour congestion in that area.
- III. The addition of 800 Mint employees to the already existing employment base of over 6,000 people in the Federal Center will justify early development of improved public bus routes to serve the area, which should result in a decreased use of private automobiles. The location of a PRT station near the Mint site will also make public transit more attractive to Mint employees and visitors. The statement draws the conclusion that, and we quote, "Although the net Vehicle Miles traveled caused by Mint traffic for the Federal Center site probably would be greater than for Park Hill, it is considered that the net adverse impact on air quality would be less with the new Mint located at the Federal Center."
- IV. The Federal Center central heating plant has sufficient capacity available to serve the proposed Mint. At Park Hill, it would be necessary to construct a heating plant for the new Mint only. This would result in an additional stationary source of pollution in an area where the air pollution level is already high, as well as adding substantially to the cost of the project.

- V. Because the relocation of the Mint to the Federal Center would be a relatively short move, and because most new employees would come from the existing metro area work force base, there would not be a sudden influx of new residents into the Lakewood area. In all probability, the effects of this move would have no noticeable impact upon the growth of the city. The predicted addition of only 150 pupils to the school system seems adequate testimony to this fact.
- VI. The Federal Center site is already owned by the Federal Government, so no land would be taken from the public tax rolls.
- VII. Tourist traffic would occur between 9 a.m. and 3 p.m. daily, and would not affect peak-hour traffic congestion. Because of its location between Denver and the mountains, Lakewood streets presently carry a high volume of tourist traffic. Location of the Mint here in all probability would not significantly increase this traffic. It would, however, cause a certain percentage of it to stop here with some positive effect on the city's economy.
- VIII. The new Mint will not become fully operational until 1980. This provides sufficient time for federal, state, and local agencies to adequately plan and prepare for the impact that this facility will have on our city.

Our organization feels that the environmental impact statement states quite clearly that location of the U. S. Mint in Lakewood would cause no significant ill-effect on the environment of our community.

However, causing "no significant ill-effect on the environment of our community" is not reason enough alone to support the selection of Lakewood as the site for the Mint. We believe the relocation of the U. S. Mint to Lakewood would be a great asset to our city. We think the benefits of having the Mint here should be considered by the citizens of Lakewood and the governing body of the city.

Since the incorporation of Lakewood in 1969, many of us have struggled to develop a sense of community identity and community pride. Community pride would combat the apathy we have experienced in local elections and on local issues, and we believe it would help make our city a better place to live.

We think that being one of only three cities in the United States to have a U. S. Mint located within its boundaries would be good reason for community pride, and could help create a distinct identity for our city.

The U. S. Mint is the top tourist attraction in the metro area, and second in the state only to the Air Force Academy. We feel Lakewood residents would take great pride in their city being the home of the Mint, and it would certainly make people outside the city aware of Lakewood, Colorado.

While the Mint would create a minimum demand for municipal services, it would result in considerable additional revenue to the city.

It is logical to assume that some portion of the Mint's \$5 million annual payroll will be spent in Lakewood. Two cents of each dollar so spent would go into the city treasury as sales tax, and would lessen the burden on the Lakewood Homeowner-taxpayer by that much. An additional one-half cent would go into the County's Open Space Acquisition Fund.

The same holds true for each new tourist dollar that would be spent here. Regardless of where within the city the payroll or tourist dollar is spent, every resident shares in the proceeds through the sales tax collected. This will help our city government keep its property tax mill levy low.

In summary, it is our position that relocating the Mint in Lakewood would prove highly beneficial to our community. We encourage the City Council to fully support the proposed Federal Center Mint site, and pledge our cooperation in making this proposal become a reality.

A RESOLUTION

REGARDING THE RESPONSE OF THE CITY OF LAKEWOOD TO DRAFT REVISED ENVIRONMENTAL IMPACT STATEMENT WITH RESPECT TO THE CONSTRUCTION OF A NEW UNITED STATES MINT AT THE DENVER FEDERAL CENTER SITE.

WHEREAS, a Draft Revised Environmental Impact Statement has been prepared under date of February 27, 1974, by the Bureau of the Mint, Department of the Treasury, Denver Mint, relating to the construction of a new United States Mint at either the Park Hill Golf Course or the Denver Federal Center; and

WHEREAS, said Draft Environmental Impact Statement and the proposed Federal Center site location have been reviewed by the City Council of the City of Lakewood and the City of Lakewood staff, and particularly the Departments of Community Services and Community Development; and the City Council has received reports of such staff review, has conducted a Public Hearing April 8, 1974, at which public comments were received, has received and considered comments directed to the Council and individual members thereof by individuals and organizations within the City; and the City Council has further reviewed said Draft Environmental Impact Statement and the proposed Federal Center site at a study session of the City Council April 11, 1974, and at a Special Meeting of the City Council held April 15, 1974.

NOW, THEREFORE, BE IT RESOLVED by the City Council of the City of Lakewood, Colorado, that:

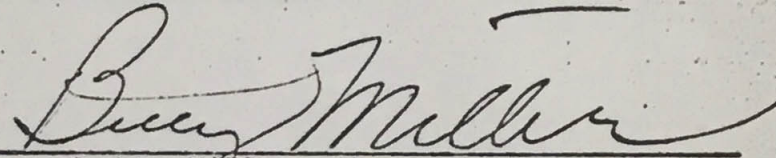
SECTION 1. The City Administrator be and is hereby authorized and directed to respond to the aforesaid Draft Revised Environmental Impact Statement relating to the location of the Mint at the proposed Denver Federal Center site by communicating to the Bureau of the Mint and the Department of the Treasury the official position of the City of Lakewood, hereby adopted, that the City favors and endorses the location of the Mint at the Federal Center site; and that the City requests further and additional environmental impact studies of traffic, public transportation and housing, to the end that potential problems which might otherwise arise in such areas by reason of the location of the Mint at the Federal Center site may be addressed and solved as a part of the process of the location of the Mint at such site.

SECTION 2. The City Administrator be and is further authorized and directed to transmit to the Bureau of the Mint, Department of the Treasury, a certified copy of this Resolution, together with a copy of a memorandum dated April 8, 1974, from Gary E. Latham, Director of the Department of Community Development, and Planning Director of the City of Lakewood, to City Administrator Walter Kane, a true copy of which is attached to this Resolution as Exhibit "A" and made a part hereof by this reference.

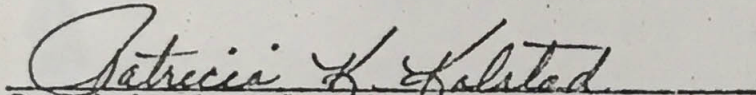
SECTION 3. The Mayor and City Administrator and all other officers and employees of the City of Lakewood are hereby authorized and directed to continue to cooperate with and furnish such assistance to the Bureau of the Mint and Department of the Treasury as may be necessary or desirable to enable such agencies to obtain such additional information as may be required for the

purpose of preparing additional, revised or final environmental impact statements relating to the location of the Mint at the Denver Federal Center site, and to assist and cooperate with the Bureau of the Mint and Department of the Treasury, and such other agencies as may be involved, in the solution of potential problems which might otherwise arise in connection with the location of the Mint at the Denver Federal Center site.

INTRODUCED, READ AND ADOPTED at a Special Meeting of the City Council on April 15, 1974, at 7 o'clock p.m. at Lakewood City Hall, 1580 Yarrow Street, Lakewood, Colorado.


Betty Miller, Mayor Pro Tem

ATTEST:

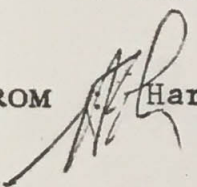

Patricia K. Kolstad, Deputy City Clerk

UNITED STATES GOVERNMENT

Memorandum

TO : All Division Heads

DATE: February 22, 1978

FROM :  Harry E. Lawrence, Deputy Supt.

SUBJECT: Equipment Requirements for Fiscal Year 1980

Please forward to me by March 20, 1978 your equipment requirement for FY 1980, based on a production figure of six (6) billion coins.



5010-109

Buy U.S. Savings Bonds Regularly on the Payroll Savings Plan



Memorandum for the Press:

January 5, 1977

Attached are letters of transmittal from Treasury Secretary William E. Simon to the President of the Senate and the Speaker of the House of Representatives transmitting a Treasury Department report on "The State of the United States Coinage."

Queries should be directed to Frank H. MacDonald, Deputy Director of the Bureau of the Mint, (202) 376-0560.

oOo



THE SECRETARY OF THE TREASURY
WASHINGTON

DEC 31 1976

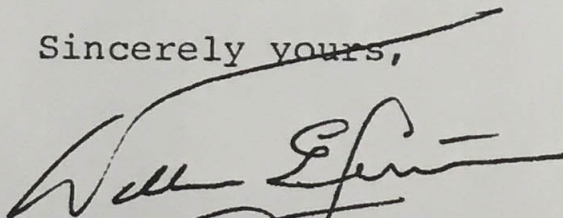
Dear Mr. President:

With President Ford's approval, I am transmitting a report prepared by the Department of the Treasury on "The State of the United States Coinage."

The report identifies two major problem areas which should receive the attention of the Congress without delay. First, the report notes that the diminishing utility of the one-cent piece in the Nation's commerce and its increased production costs suggest giving serious consideration to eliminating the one-cent piece from our coinage system. In addition, the report recommends the replacement of the existing dollar coin with a smaller, conveniently-sized dollar, as well as the elimination of the half-dollar from the Nation's circulating denominations.

I respectfully urge consideration of the report and its recommendations by the Senate at the earliest feasible date.

Sincerely yours,



William E. Simon

The Honorable
Nelson A. Rockefeller
President of the Senate
Washington, DC 20510

Enclosure



THE SECRETARY OF THE TREASURY
WASHINGTON

DEC 31 1976

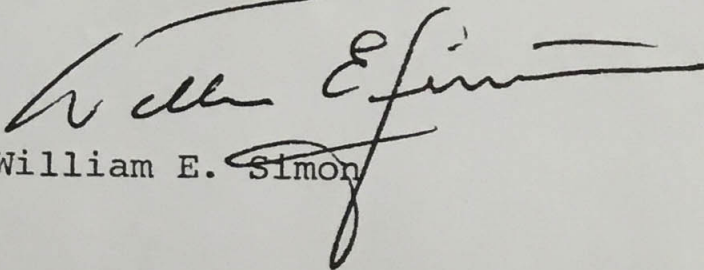
Dear Mr. Speaker:

With President Ford's approval, I am transmitting a report prepared by the Department of the Treasury on "The State of the United States Coinage."

The report identifies two major problem areas which should receive the attention of the Congress without delay. First, the report notes that the diminishing utility of the one-cent piece in the Nation's commerce and its increased production costs suggest giving serious consideration to eliminating the one-cent piece from our coinage system. In addition, the report recommends the replacement of the existing dollar coin with a smaller, conveniently-sized dollar, as well as the elimination of the half-dollar from the Nation's circulating denominations.

I respectfully urge consideration of the report and its recommendations by the House of Representatives at the earliest feasible date.

Sincerely yours,


William E. Simon

The Honorable
Carl Albert
Speaker of the House
of Representatives
Washington, DC 20515

Enclosure

THE STATE OF THE UNITED STATES COINAGE

I. INTRODUCTION

After completion of a comprehensive review of United States coinage system requirements to 1990, the Treasury Department has identified substantial deficiencies in the existing system which require resolution in the near future. There are two major problem areas:

- (1) the diminishing utility of the one-cent denomination in commerce, and
- (2) the failure of the present half-dollar and dollar coins to circulate readily.

ONE-CENT COIN

The United States Government is rapidly approaching a decision point concerning continuance of the one-cent coin. The decision is prompted by the diminishing utility of the one-cent coin in commerce, causing ever-increasing production to compensate for high attrition of coins from the circulating supply. Inflation has a double impact because it increases the cost per transaction of keeping a one-cent coin in circulation while simultaneously decreasing

If coin demand and economic market conditions meet current projections, and if the current coinage system remains unaltered, the present coin manufacturing capacity of the Bureau of the Mint must be increased about 20% by 1980, and must be almost tripled by 1990. This projected build-up of mint capacities will be solely for cent manufacturing. Presently cent manufacturing accounts for 75% of all coin production. By 1990, over 90% of capacity would be dedicated to manufacturing cents, which would cost about 2 cents for each coin produced.

Elimination of the cent coin at some later date would be a much more drastic action than elimination now, since in the future more production plant and equipment and more Mint employees would be affected by the precipitous reduction in production requirements.

Alternative one-cent coins which are less costly to produce have been examined. These alternatives would, of course, lower the production and distribution costs for a period of time but, in the best case, only to 1990, when cost would again exceed face value. Changeover confusion would also be considerable. Importantly, however, an alternate coin does not solve the basic phenomenon of decreasing utility in commerce and the increasing day-to-day transaction handling costs.

II. THE CURRENT COINAGE SYSTEM

The Secretary of the Treasury is responsible for the production of coins in such quantities as he determines necessary to meet the Nation's needs. The Secretary's statutory responsibility for the production of coins is carried out by the Bureau of the Mint, whose two major field facilities, the Philadelphia and Denver Mints, manufacture most of the country's coinage for circulation. Once produced, the coins are shipped by the Mint to the Federal Reserve Banks and branches, which, in turn, distribute the coins to commercial banks.

As specified by law, the Nation's coinage system currently consists of the following denominations: dollar, half-dollar, quarter, dime, nickel and the cent. All physical characteristics of the coins, including their alloy, size and weight, are specified by law. Since the late 1960's all denominations from the dime through the dollar have been made from a clad (sandwich) material which has thin outer layers of cupro-nickel (75% copper and 25% nickel) and an inner core of pure copper. The five-cent piece is made from an alloy consisting of 75% copper and 25% nickel; the one-cent piece is composed of 95% copper and 5% zinc.

III. CONSEQUENCES OF RETAINING THE PRESENT COINAGE SYSTEM

The consequences of retaining the present coinage system can be derived from the experienced and projected growth in the demand for circulating coins. Production by the Bureau of the Mint increased from 2.7 billion coins in Fiscal Year 1961 to 12.6 billion in Fiscal Year 1976. With the present set of denominations, annual coin requirements are forecast to increase to 18 billion by 1980 and to 41 billion by 1990. To provide a basis for planning and implementing action by the Bureau of the Mint, several different methods and mathematical models have been developed for estimating future coinage requirements. The 18 billion figure for 1980 and the 41 billion figure for 1990 are in the intermediate portion of the range of forecasts which are provided by using the various methods and models.

The factors or relationships underlying the demand for cents are different from those affecting the demand for all other coin denominations. A stable relationship exists between the demand for nickels, dimes and quarters and the growth in retail sales, or similar measures of economic activity. Cent demand is less predictable due to the unique functions of this denomination in commercial transactions and the evident declining utility.

would be solely to provide replacements for coins removed from the circulating pool. As the 1990 projected production of 37 billion cents would be about 90% of the expected total requirement for all denominations, cent projections are clearly the most significant impact on required production capacity and on total coinage system costs.

Current forecasts show that total coinage demand will exceed present Mint production capacity by about 1980, and will exceed present capacity by as much as two or three times by 1990. In addition, valuable resources and substantial costs would be involved in producing the tremendous number of one-cent coins, which would not circulate and which would be of limited value commercially.

The cost to the public of maintaining a coinage system includes all costs of the Mint in producing, handling and shipping its product. In addition, costs of handling, storing and distributing the coins by the Federal Reserve System, commercial banks and merchants are all passed to the consumer in one form or another. By this definition, the aggregate costs to our society of maintaining an adequate supply of cents have been estimated. The estimates were based on reasonable assumptions regarding increases in costs

This facility, when fully equipped, would have a capacity of 16 billion coins per year, at an estimated full capital investment cost of \$86 million. To fulfill the 1990 projected requirement of 41.5 billion coins, additional capacity from the present base in the amount of 25 billion coins per year would be required. Extrapolating from the cost estimate for the planned new Denver Mint, by 1990 capital investment in the order of \$200 million would be required to meet reasonable demand projections. Without the one-cent piece in the coinage system, additional capacity would not be required and, in fact, present Mint capacity should be sufficient until at least the year 2000.

IV. ALTERNATIVES TO THE PRESENT COINAGE SYSTEM

A. Elimination of the One-cent Coin

The one-cent piece would have to be eliminated soon in order to forestall the excessive costs to the public of maintaining in circulation a coin of so little value for commerce.

The cent has been the minimum U.S. coinage denomination since 1857, when Congress eliminated the half-cent. The purchasing power of a cent in 1917 was equivalent to that of a nickel in 1975, and (assuming a 5% inflation rate) to the projected value of a dime in 1990.

about \$150 million annually in 1980, and about \$600 million by 1990. Also, expenditures of nearly \$200 million for establishment of additional mint capacity to 1990 would be avoided if the cent were eliminated.

In addition to the reduced costs, removing the cent from the coinage system also would eliminate the consumption of valuable and increasingly scarce metal resources. With the present configuration and alloy of the cent, this "waste" of metal is in the order of 39,000 tons of copper in Fiscal Year 1977, with a projected growth to 129,000 tons by 1990. These are significant uses of a resource which has important military applications as well as wide commercial applications in the electrical, construction and transportation industries.

Discontinuing cent production would reduce the manufacturing requirements of the Bureau of the Mint by more than 60%. Excluding this denomination, total production requirements to 1990 are not expected to exceed 7 billion coins annually, and present coin production capacity would be more than adequate to the 21st century.

Preferences of Affected Institutions and Individuals

While the Treasury Department has surveyed various affected institutions concerning the possible elimination of the one-cent piece, no attempt has been made to poll the

savings to the Government and to business, that would no longer have to deal with the coin. However, since a significant sampling of public opinion has not been conducted, the real attitudes and desires of the American people on this subject are not known at this time.

Retail firms and commercial banks recently surveyed by the Department have also expressed opposition to the elimination of the cent because of assumed inflationary impacts, as well as anticipated inconveniences which the absence of the cent would cause in cash transactions. Further, the overwhelming majority of state revenue departments opposed the discontinuance of cents, because of problems associated with the adjustment of existing state sales tax schedules and collection of tax revenues at the retail level.

The Perception of Inflation

There is a prevalent notion that eliminating the cent would generate an automatic increase in consumer prices. Although the inflationary impact has not been systematically studied, it does not necessarily follow that prices will rise. For example, absence of the cent in cash transactions does not mean that prices would have to be stated in five-cent increments. Many prices, particularly for items that typically sell in multiples or as part of a basket of

Summary

The primary advantage of eliminating the cent soon is that immediate resolution of the dilemma eliminates the cost of maintaining circulation and increasing mint capacity to meet an artificially-high demand, which is nearly all due to attrition caused by the coin's declining purchasing power.

Terminating cent production in the near future will permit the Mint to reduce its operating costs, as well as to avoid the expense of constructing new capacity. Deferring the decision to halt cent production will necessitate a costly expansion of manufacturing capacity, to be followed--when the decision is finally made--by a large-scale and more disruptive cutback than would occur now.

Retaining the cent indefinitely would require a large capital investment commitment by the Government. In 15 years the annual U.S. production of cents alone would exceed the quantity of all coins produced world-wide during 1974, and at a cost of nearly 2¢ per piece. Clearly, before that point is reached, cents will no longer be commercially useful, and elimination of the denomination will be warranted.

A recent survey of commercial banks and merchants conducted by the Bureau of the Mint, disclosed a desire by both groups that the present dollar and half-dollar coins be eliminated. Of all the groups surveyed, only the vending and coin equipment manufacturers gave a favorable response to the introduction of a new dollar coin. At the present time, with the exception of a limited supply of very expensive bill changers, there are no dollar vending machines.

Initial circulation would be very much dependent upon the production of dollar coin vending devices. At the present time, approximately 30% of vending machine sales are 60 cents or more. Despite industry survey results to the contrary, one must question whether dollar vending machines will be developed and installed on the speculation that consumers would obtain the coins and use them. However, a commitment on the part of the vending industry probably would be forthcoming if legislation were enacted to replace the existing dollar coin with a smaller, conveniently-sized coin.

Large scale production of automated machines which would accept dollar coins could be accomplished in 18 to 24 months after legislation is enacted. Considering the time required for production of new automated machines

Because of its value relative to other coins, the new dollar might be expected to be susceptible to slugging or counterfeiting. Vending machine and production technology, however, have reduced this risk to minimal proportions. In fact, dollar coin changers would be considerably less expensive and offer greater security than dollar bill changers.

Cost

The cost of producing the new dollar coin would be approximately 3 cents, compared to 6 cents for the present dollar coin and 1.5 cents for the \$1 bill. Initial annual production requirements of 300 million dollar coins would cost the same (\$9 million) as producing the current average of 60 million dollar coins and 180 million half-dollars. After the first few years the quantity produced is likely to increase. This may be offset by decreased requirements for the quarter dollar as new vending machines become available.

The new one dollar coin offers potential cost savings by supplanting some of the demand for one dollar bills. The coin would have an average life of 15 years, while the bill, costing 1.5 cents, lasts approximately 15 months. Thus it would take 12 bills, costing 18 cents, to provide the medium of exchange service life of one dollar coin, costing 3 cents.

and services such as mass transit usage. At the same time, consideration should be given to discontinuing half-dollar production since the introduction of a smaller dollar coin would further diminish the usefulness of a coin which is not presently used to any significant degree for commercial transactions.

V. PROPOSED ACTIONS

In view of the foregoing, the Department believes that the Congress should give serious consideration to the question of whether the cent is needed in our coinage system. The analyses conducted by this Department show conclusively that elimination of the cent after a suitable preparatory period, but no later than 1980, would eliminate substantial production and distribution costs.

However, no decision should be made without full scale public hearings and a thorough understanding of the impact on the consumer and the various institutions involved. The consumer issue is complex and will need to be thoroughly reviewed before determining the final course of action. The Department feels that the potential cost reductions and the diminishing utility of the cent warrant such a review at this time and will be pleased to cooperate in every way possible.

In addition, the Congress should authorize the replacement of the existing dollar coin with a smaller, conveniently-sized dollar, as well as the elimination of the half-dollar from the Nation's circulating denominations. Congressional review and analysis of these recommendations at the earliest feasible date are urged by the Department.

Frank Rhea

4B
9

copy of land
use plan

Mrs.

Eileen
Draper

837-4556

RESOLUTION ADOPTING REGIONAL PLANS

WHEREAS, it is a function and duty of the Denver Regional Council of Governments, as a Regional Planning Commission under the laws of the State of Colorado, to make and adopt a regional plan for development of the territory within its jurisdiction; and

WHEREAS, the Denver Regional Council of Governments has developed transportation and land use plans through the Joint Regional Planning Program; and

WHEREAS, on June 20, 1973, the Denver Regional Council of Governments tentatively adopted Regional Land Use, Public Transportation, and Highway Plans, as components of the regional master plan; and

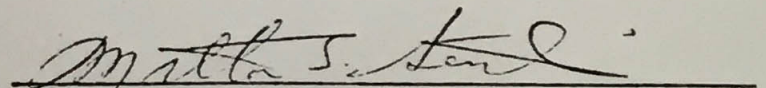
WHEREAS, such action was tentative until such time as the Regional Transportation District and the Colorado Division of Highways adopted identical plans, or any differences in the plans adopted by the Joint Regional Planning Program's participating agencies were reconciled; and

WHEREAS, the Summary Report, entitled "Regional Land Use, Highway and Public Transportation Plans" presents in descriptive text and map form these plans as reconciled by and between the Denver Regional Council of Governments, the Regional Transportation District, and the Colorado Division of Highways.

NOW, THEREFORE, BE IT RESOLVED that pursuant to its Articles of Association, and authority granted under Chapter 106, Article 2, of the Colorado Revised Statutes of 1963, the Denver Regional Council of Governments hereby adopts, as part of the regional master plan of the Denver Region, its Summary Report, entitled "Regional Land Use, Highway, and Public Transportation Plans" together with the maps entitled, "Land Use Plan, Street and Highway Plan, and Public Transportation Plan" for that portion of its jurisdiction described therein and shown thereon. These plans amend and supersede any land use, street and highway, or public transportation plan, for the described area adopted as part of the regional master plan prior to this date.

BE IT FURTHER RESOLVED that the Chairman of the Denver Regional Council of Governments is hereby authorized to certify copies of these plan materials to all municipalities and counties lying wholly or partly within the Denver Region.

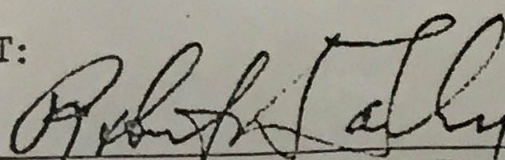
Denver, Colorado
December 19, 1973

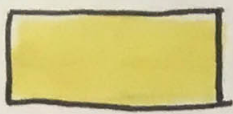


Milton E. Senti
Chairman

Denver Regional Council of Governments

ATTEST:


Robert D. Farley, Executive Director



LOW DENSITY URBANIZATION



HIGH DENSITY URBANIZATION



EMPLOYMENT



TRANSPORTATION



PUBLIC ACCESS CONSERVATION



PRIVATE ACCESS CONSERVATION



ACTIVITY CENTER

DRAFT

REGIONAL LAND USE, HIGHWAY AND PUBLIC
TRANSPORTATION PLANS

DENVER REGION

Summary Report

October 17, 1973

Prepared by

Denver Regional Council of Governments

Preparation of this report has been financed in part through grants from the U. S. Department of Transportation, Urban Mass Transportation Administration and Federal Highway Administration and the U. S. Department of Housing and Urban Development.

Joint Regional Planning Program

PREFACE

This report summarizes ¹ the Regional Land Use, Highway and Public Transportation Plans developed by the Joint Regional Planning Program.

This report has been prepared by the Denver Regional Council of Governments as part of the 1973-74 Work Program of the Joint Regional Planning Program under Task 11.0, Continuing Studies.

Participating agencies in the Joint Regional Planning Program are :

Denver Regional Council of Governments
Regional Transportation District
Colorado Division of Highways

The report presents the adopted land use, highway and public transportation maps and summarizes the major policy implications of each plan.

The Regional Transportation District has also adopted plans for the area in Douglas County, and portions of Jefferson and Boulder Counties, which are within the RTD jurisdiction, but which are not shown on the JRPP Plan Maps. They are not contained in this report because some of this area is outside of the jurisdiction of member government of the DRCOG.

TABLE OF CONTENTS

<u>Chapter</u>		<u>Page</u>
	PREFACE	i
I	PLAN DEVELOPMENT	1
II	LAND USE PLAN AND POLICIES	5
III	HIGHWAY PLAN	10
IV	PUBLIC TRANSPORTATION PLAN	14
V	PLAN IMPLEMENTATION ACTIONS	17

FIGURES

1.	Planning Area	2
2.	Land Use Plan	6
3.	Highway Plan	11
4.	Public Transportation Plan	15

I. PLAN DEVELOPMENT

On April 16, 1971, the Denver Regional Council of Governments, Regional Transportation District and Colorado Division of Highways joined to form the Joint Regional Planning Program. The objectives of the program are:

- To integrate regional transportation planning with other elements of the comprehensive planning process.
- To meet the planning requirements of the 1962 Federal Aid Highway Act, the 1964 Urban Mass Transportation Act, as amended, and other acts as appropriate.
- To develop, update and adopt transportation and land use plans.
- To translate plans into priority programs.
- To develop a continuing long range comprehensive and transportation planning capability within the Denver Regional Council of Governments, to serve the Colorado Division of Highways' and the Regional Transportation District's future planning needs.

With the objectives achieved, the Joint Regional Planning Program can now turn its emphasis to assisting local and state agencies to implement the plans.

The general planning area under which this program has developed plans is shown on Figure 1, and includes the Denver and Boulder urbanized areas.

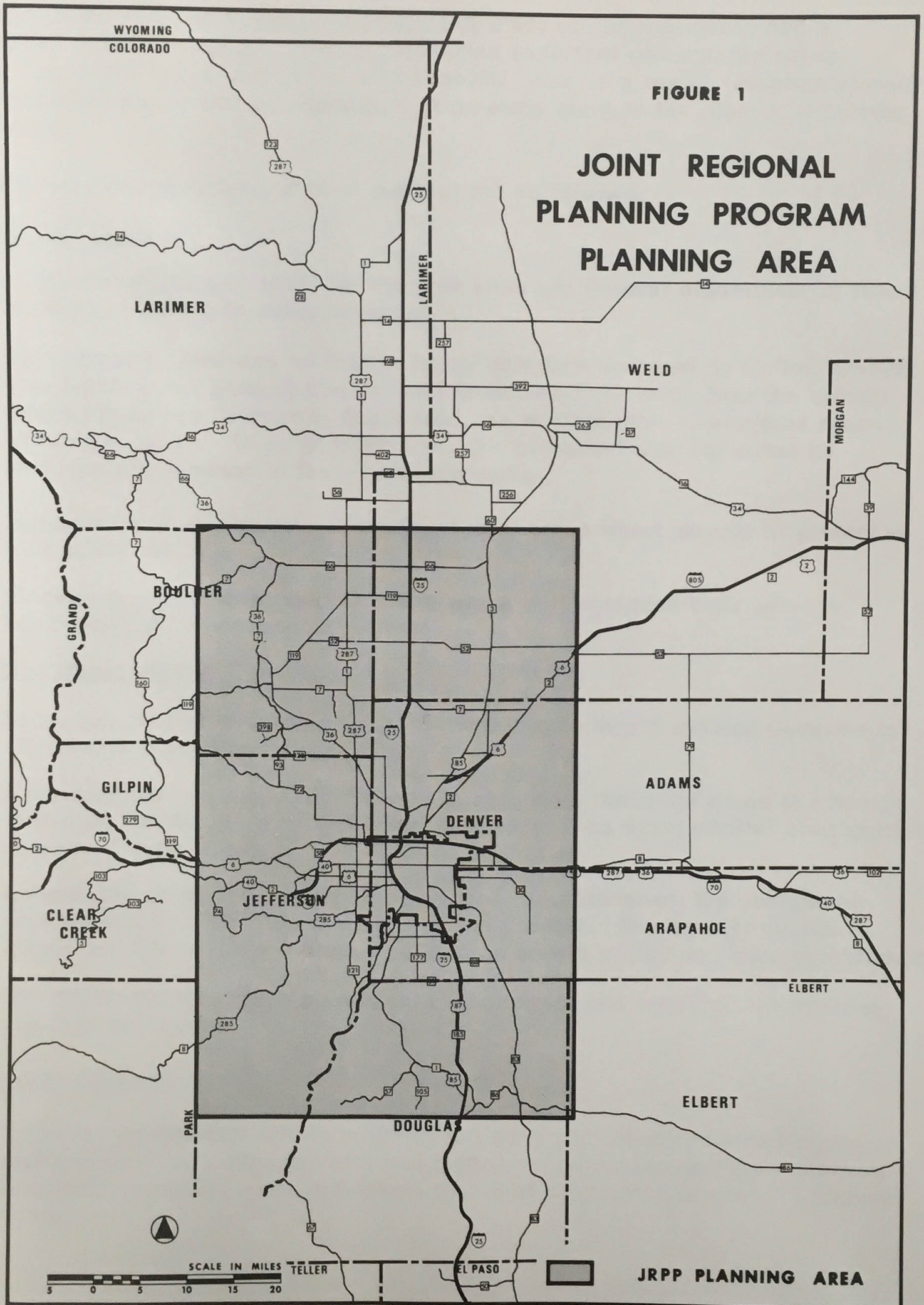
After an expenditure of nearly three million dollars, the JRPP has developed the plans summarized in this report. The Regional Transportation District is the transit operating agency responsible for the implementation of the public transportation component.

For the first year of the program, the agencies developed an extensive information data base, including ecological and environmental maps, computer files of travel pattern information, and population and employment characteristics. At the same time, the JRPP initiated development of sophisticated computer programs that could simulate the future growth of the region, as well as travel on proposed highways and public transportation systems.

During this first year of data collection and development of analytic tools, the JRPP surveyed local governments and citizen groups to determine their needs and desires.

FIGURE 1

JOINT REGIONAL PLANNING PROGRAM PLANNING AREA



These tasks resulted in the development of a set of regional goals and a detailed set of "concepts," which were used to further develop the plans. The "concepts" were definitive, and absolute, and as a result, eliminated many alternatives plans from consideration at an early point in the plan development process.

The major considerations of each concept are as follows:

Land Use Concept

- A regional population level for the year 2000 and general guidelines for future residential growth in suburban areas.
- High intensity land use located in broad corridors centered on Colfax Avenue, from I-225 to the Federal Center, and Broadway Boulevard, from the Denver Central Business District to Englewood, as well as other designated areas within the region. In many instances, the increased activity would be developed by removal of lower intensity uses.
- Recognition of ecological and environmental areas which should be protected from urban use.
- Placement of industrial uses in areas which will minimize their adverse ecological and environmental effects.

Public Transportation Concept

- Local bus service should be available within reasonable walking distance to all urbanized portions of the region.
- A regional bus system would directly interconnect the major areas of activity, including Boulder, Denver and Longmont, as well as some smaller communities outside of these areas.
- A rapid transit system should be developed to interconnect the designated activity areas and corridors of Denver and Boulder. The Boulder system should be defined after a clear direction on growth policy has been established.
- The public transportation plan should complement and reinforce the highway and land use plans.

Highway Concept

- Highway construction within built-up and currently urbanized areas of the region should be minimized with due regard to congestion and the increased accident, operating costs and travel time that congestion creates for highway users.

- Additional freeway construction is appropriate, particularly in suburban areas which cannot be adequately served by the public transportation system because of their location within the Region.
- The highway plan should complement and reinforce the public transportation and land use plans.

Using these general guidelines, the data base and analytical tools, the planning staffs of the three agencies developed the three plans described in Chapters II, III and IV during the second year of the program.

II. LAND USE PLAN AND POLICIES

The Land Use Plan provides an overall framework to guide future development within the Denver Region. An analysis of the plan will show that it is broad in its coverage; its purpose is not to replace local plans, but to provide a direction upon which local decisions can be made.

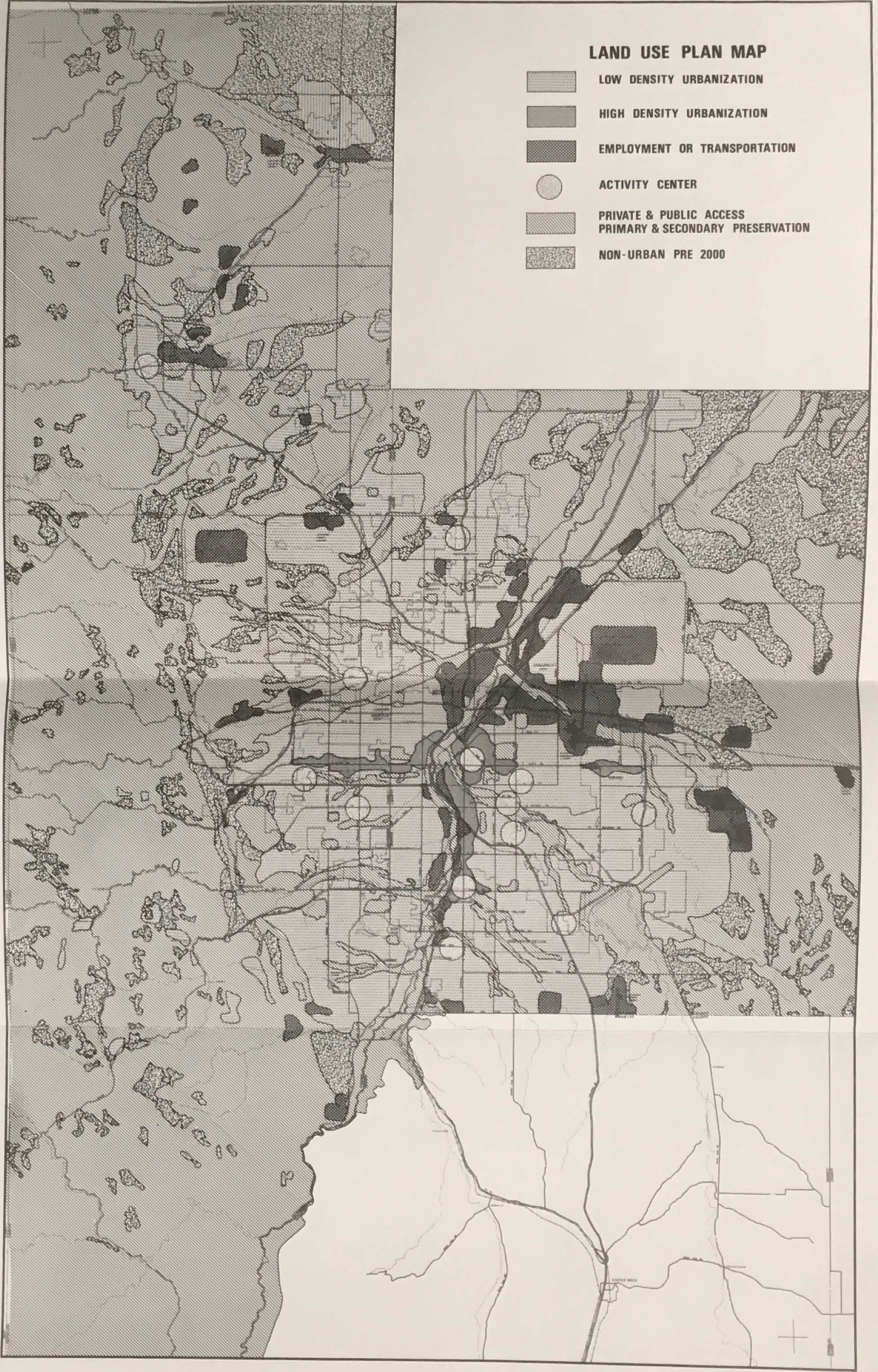
The plan map, Figure 2, indicates crucial decision areas which need to be addressed at the regional level. The shadings of the map, in one sense, are only representations of a series of very specific policies which are designed to guide the future growth of the region. The policies are the important element of the plan, for it is these statements upon which development decisions can be based.

Plan Policy Statements

1. A population level below 2,350,000 should be encouraged for the Denver Metropolitan Statistical Area² by the year 2000.
2. The Central Business District of Denver will be encouraged as the major high density core of business, cultural, governmental, commercial and residential activity. Major high density corridors east, west and south from the CBD shall be encouraged.
3. Several major activity centers shall be encouraged in the Metropolitan Area.
4. New, low density, residential growth should be encouraged only in locations contiguous to existing urban areas while recognizing local ecological or social concerns as they might affect the location of a specific development.
5. New industrial development should be encouraged only insofar as suitable locations could be found where environmental hazard potential can be effectively controlled or minimized. Major new employment concentrations of any type should be closely analyzed as to their total regional and state impact, which analysis should carefully consider the adverse costs, such as peak hour travel, work trips, and public service costs.
6. Major unique urban areas presently within the Denver SMSA will be encouraged to remain unique; that is, not to ultimately be allowed to expand and run together into a nondescript, low density urban sprawl.

LAND USE PLAN MAP

- LOW DENSITY URBANIZATION
- HIGH DENSITY URBANIZATION
- EMPLOYMENT OR TRANSPORTATION
- ACTIVITY CENTER
- PRIVATE & PUBLIC ACCESS
PRIMARY & SECONDARY PRESERVATION
- NON-URBAN PRE 2000



7. Major areas of ecological, environmental, agricultural, historic and archeological significance shall remain in a natural open or low density non-urban condition.

The policies address three critical issues: What should be the overall growth of the region? Where should it locate? How should it be integrated with the environment?

Overall Growth

The first question, or what is the overall growth expected by the year 2000, is critical.

The rapid pace of urbanization, population, growth and economic activity observed in the Denver Region over the decade of the 1960's has accelerated since the 1970 Census. A substantial surge in immigration and residential construction has resulted in the conversion of large parcels of formerly agricultural or vacant land to single and multiple family residential use, especially in areas lying on the periphery of the urbanized area. While this growth has not been especially concentrated in areas unsuitable for residential use, it has generated substantial concern and discussion over effects of urban sprawl and other potential inefficient and undesirable trends.

The current growth of population has been about 5% per year over the last two years. The policy, however, implies a substantial reduction in the yearly growth rate. By the year 2000, we expect a population of about 2,350,000. That population implies an average yearly growth of about 3%.

The Location of New Growth

The second major item addressed by the policies deals with the new growth location. The plan recommends a series of major activity centers, or dense concentrations of urban activity, and several high density corridors, as well as the reinforcement of the Denver Central Business District. The plan also recommends where major concentrations of employment activity are most desirable.

Activity Centers. The activity centers are designed as aggregations of urban activity large enough to be primary generators of large internal activity. The centers are considered a key tool by which the Regional Plan can be achieved. They are identified on Figure 2 as circles.

Of the 1,000,000 new individuals anticipated within the region by the year 2000, approximately 300,000 of them will be encouraged to locate in or near the activity centers and high density corridors.

The centers would create visual nodes of higher level activity and services throughout the region. By orderly location of that activity, some development pressure can be relieved from the urban fringe area, and also provide the desired redevelopment of currently depressed areas. By providing these cores of activity over the region, it is expected that a large portion of the individuals living within the center areas would be able to work and shop there, hence, relieving some travel demand throughout the region. Each center's primary geographical coverage would extend through an area of roughly one mile in radius, although the actual development of the center would be a responsibility of local government.

The Centers recommended are:

Center	General Location
Boulder	University of Colorado/Crossroads Shopping Area/ CBD
Northglenn	Northglenn Shopping Area/Western Electric Front Range Denver Area
Arvada	Old CBD/Tri-Center Area
Federal Center	Federal Center/Community College/Westland Areas
Villa	Villa Italia Vicinity
Alameda	Alameda/I-225 Area
Denver CBD	CBD/Auraria/Skyline
Medical Center	CU Medical Center/Colorado-Colfax Area
Cherry Creek	General Cherry Creek Shopping and Residential Area
South Colorado	Colorado Blvd./I-25 Area
Englewood	Englewood CBD/Cinderella City Shopping Center
Technological Center	General Area of Denver Technological Center/ Greenwood Plaza
Littleton	Littleton CBD Area

The plan recommends two high intensity land use corridors which would be served by the fixed guideway public transportation system (the entire public transportation system is described in Chapter IV).

The land use corridors would be located east and west of the Denver CBD along Colfax from approximately Kipling Avenue on the west to Interstate 225 on the east, with one exception, that is, between Colorado Blvd. and the eastern Denver City Limits. The other corridor would be located south from the Denver CBD in the vicinity of Broadway Avenue to approximately Englewood.

The corridors are approximately one-quarter to one-half mile wide, not necessarily centered specifically along either Colfax or Broadway. Overall densities within those corridors will be higher on the average than existing densities. An overall density of upwards of twenty dwelling units per acre is expected, with some small areas being much higher.

Employment. The plan does not specify future employment areas. It identifies major existing areas of industrial development. Selection of future areas should most appropriately be made by local governments, although the DRCOG is attempting to identify those areas most desirable from a regional perspective.

Environment

Several policies have been formulated to address how developments should interface within the environment.

The plan map identifies those areas felt to be significant in terms of preserving in an open or non-urban density form. The three major areas recognized on the plan are those where development should be totally restricted, based upon flood plain or other natural constraints, and areas of public and private access open space.

The areas of private access open space are those areas which are favorable for agricultural uses. Those areas should be preserved as major wedges of open space for the definition of the overall regional form. They could remain in private ownership and they should not be developed.

Public access parks and recreational areas identified on the map are existing or proposed parks open to the public.

A combination of the public and private access conservation and recreational areas forms the recommended regional Open Space Plan.³

III. HIGHWAY PLAN

The Highway Plan, shown on Figure 3, pictures those limited access facilities and principal arterials within the study area which have been planned to carry the majority of traffic in the region.

It is a systems plan and identifies only general corridors. Interchange locations and detailed alignments are not shown. These can only be determined through a corridor or design study. Upon completion, the plan can be modified to the desired degree of detail.

The Highway Plan has been designed to work with and complement the Regional Land Use and Public Transportation Plans.

The Highway Plan, with its grid of principal arterials, spaced one to two miles apart, and its grid of limited access facilities, spaced four to five miles apart, serves the low intensity developments, while the public transportation system serves the high intensity areas.

The Plan provides for the addition of 80 miles to the limited access facilities. Major elements requiring construction include:

Interstate 470: This facility will serve the anticipated growth in Southern Jefferson County, Arapahoe and Douglas Counties.

Interstate 225: This facility will be completed from Parker Road to I-25.

Interstate 25: This is, and will continue to be, the most heavily traveled freeway in the region.

Interstate 80S: This facility will connect Interstate 25 with Interstate 70 and will follow the Clear Creek flood plain.

Hampden Avenue: This facility will service the east-west travel in the southern portion of the Denver Metropolitan Area. A detailed location study will be required between Santa Fe Drive and Interstate 25 before the facility can finally be located.

Santa Fe Drive: This facility, long discussed as the "Columbine Freeway," is needed to serve the travel needs of the developing south and south-western portions of the Metropolitan Area. The facilities implementation will have to be coordinated with that of the construction of the rapid transit line which uses the same corridor.

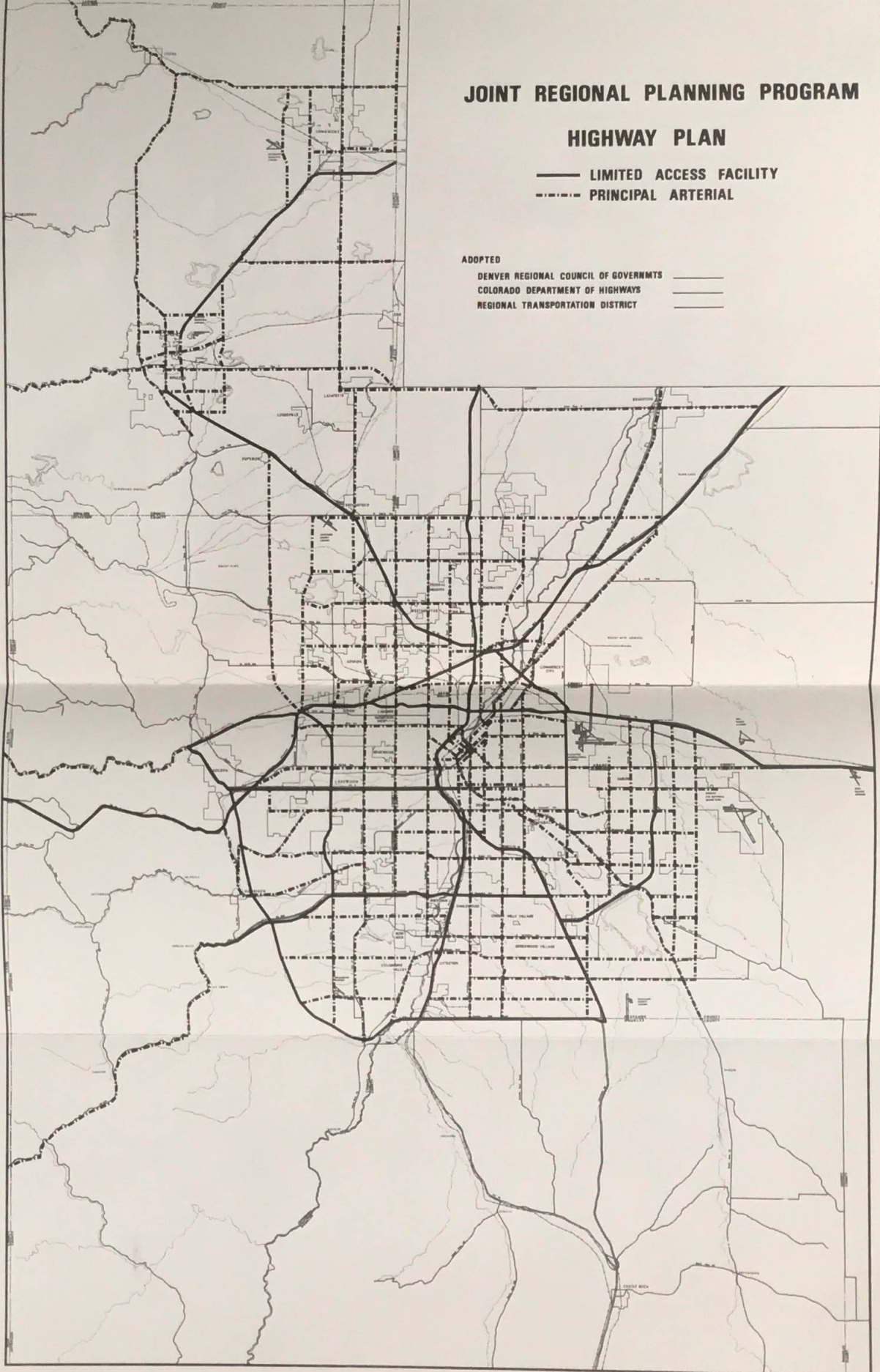
JOINT REGIONAL PLANNING PROGRAM

HIGHWAY PLAN

— LIMITED ACCESS FACILITY
- - - - - PRINCIPAL ARTERIAL

ADOPTED

DENVER REGIONAL COUNCIL OF GOVERNMENTS _____
COLORADO DEPARTMENT OF HIGHWAYS _____
REGIONAL TRANSPORTATION DISTRICT _____



Kipling: This facility is being planned as an arterial by the City of Lakewood. The City of Wheat Ridge strongly opposes its construction. The expansion of this arterial to a limited access facility will have to carefully consider the highway's economic and environmental benefits and costs.

Quebec: This facility, from I-70 to Parker Road, will require extensive citizen participation and environmental design before it will meet the travel and community needs of the area affected. This element is placed on the regional plan pending more detailed analysis that must be done by the Joint Regional Planning Program and the Colorado Division of Highways.

Longmont Diagonal: This facility will connect Longmont with I-25 and the City of Boulder.

Some of the routes on the principal arterial system will require extensive widening or construction, but will carry much less volume than the limited access facilities.

Of particular concern are those construction projects which are identified on the Plan, but for which location and design studies and environmental impact statements have not been completed. Principal arterials which are included in this category include:

Alameda Avenue: This corridor, from at least Kipling Avenue to Interstate 225, should be developed into an arterial. Extensive environmental design will be required in the facility's central section in order to make it compatible with local needs and desires.

Cherry Creek Parkway: This facility has several environmental problems associated with its location.

Orchard Parkway: This facility, through Greenwood Village and Littleton, will require extensive environmental design. The controversial need for a "transition" near the Littleton/Greenwood Village border will have to be resolved in the location or design study.

Additional Study Needs: Facilities requiring extensive construction all require environmental impact studies and location/design studies. The Joint Regional Planning Program will review these analyses and modify the plan as necessary as this detailed information becomes available. Decisions made in selecting the current plan may have to be modified as more detailed and timely information becomes available. In addition, the following studies also should be initiated.

McCaslin Boulevard: A more detailed systems study should be completed in a corridor from U. S. 36 to the Weld/Larimer County Line, concerning the need for a major highway facility to serve the travel needs in Larimer, Boulder and Jefferson Counties.

Longmont: A more detailed analysis of the internal circulation and bypass needs of the City of Longmont.

Lafayette: A more detailed study of bypass needs of the City of Lafayette should be initiated.

Boulder: A more detailed study of the highway and public transportation needs of the City of Boulder should be done and coupled with the findings of the Growth Commission and the findings of the ongoing transit study.

IV. PUBLIC TRANSPORTATION PLAN

The JRPP plan for public transportation consists of four elements: local bus, express bus, regional bus, and personal rapid transit (PRT). Each element works to complement the others in a totally integrated public transportation system. Figure 4 identifies the personal rapid transit corridors and the general service area for the bus system.

Local and Express Bus

The first step in the implementation of the transportation plan is improvement of the local and express bus system. The Regional Transportation District has developed a plan for immediate improvements called the Early Action Program. Already this program is in the first stages of implementation.

Eventually, the bus fleet will have about 750 buses, and almost all residents of the urbanized portions of the District will be able to "walk to the bus."

For the City of Boulder, the plan provides that a local bus system will be developed, and that additional facilities will be added as necessary, after a firm direction on local goals and objectives with respect to growth and transportation have been determined.

Regional Bus

The regional bus system will provide intercity public transit. The system will provide service from the Castle Rock area to as far north as Longmont and Boulder. Regional service will connect Denver, Boulder, Longmont, Louisville, Lafayette, Parker, Franktown, and other smaller communities in the Regional Transportation District.

Personal Rapid Transit

The rapid transit system shown on Figure 4 will connect the areas of more intense activity. The totally automated personal rapid transit system will provide a high level of service to the public on a 24 hour basis. Eventually, 1,400 vehicles will operate on 100 miles of guideway, providing convenient public transit to metropolitan centers of activity.

Unlike more conventional forms of rapid transit, PRT allows service to be tailored to the demand as it fluctuates during the day. Service will be tailored to match these varied passenger demand levels. During peak use periods, the vehicles will operate in a scheduled mode in order to provide high system capacity. During

JOINT REGIONAL PLANNING PROGRAM

PUBLIC TRANSPORTATION PLAN

-  RAPID TRANSIT FACILITY
-  BUS ROUTE
-  BUS SERVICE AREA

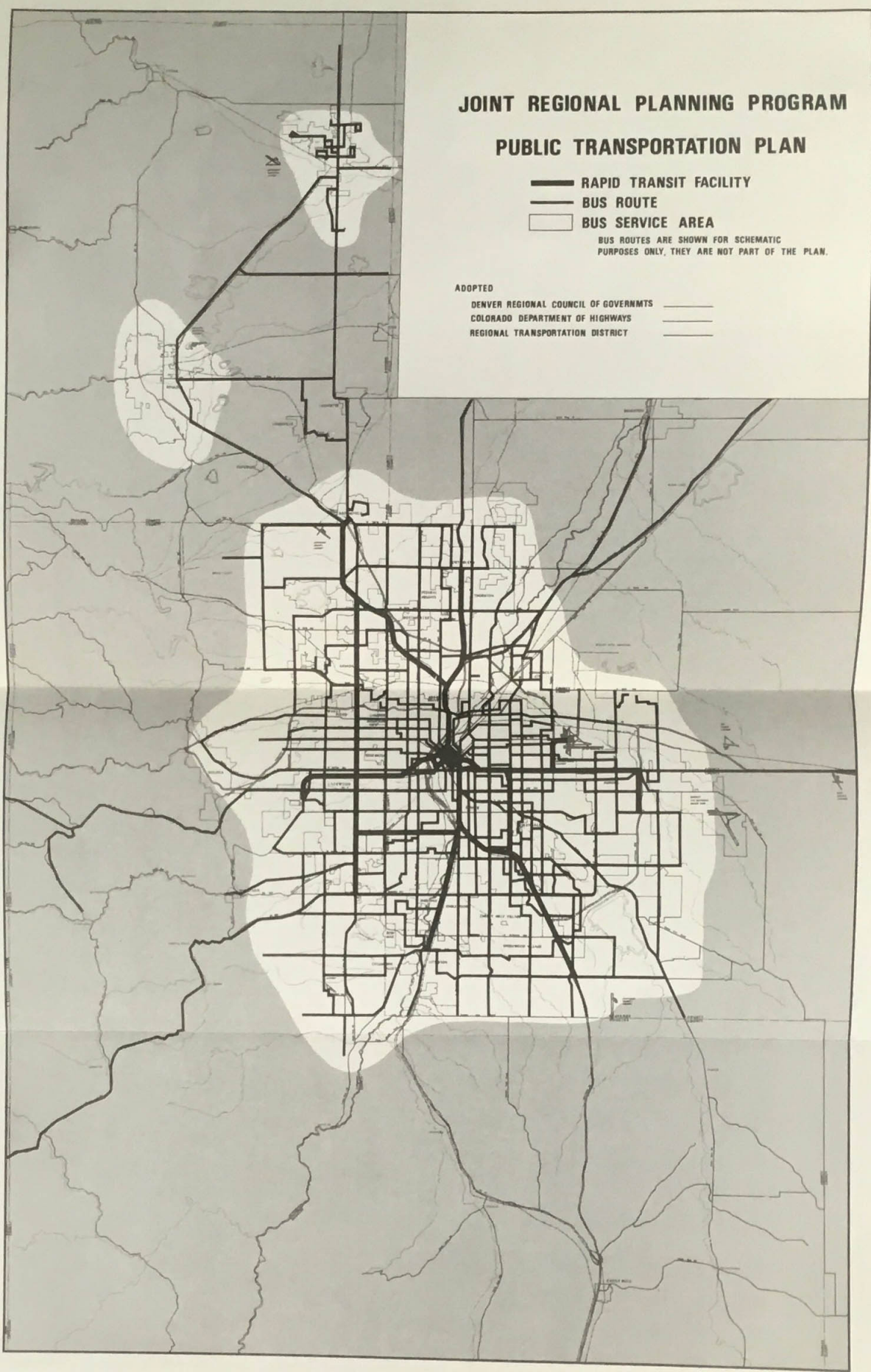
BUS ROUTES ARE SHOWN FOR SCHEMATIC
PURPOSES ONLY, THEY ARE NOT PART OF THE PLAN.

ADOPTED

DENVER REGIONAL COUNCIL OF GOVERNMENTS

COLORADO DEPARTMENT OF HIGHWAYS

REGIONAL TRANSPORTATION DISTRICT



off-peak periods, vehicles will move in a demand-responsive mode which provides a higher level of service and avoids the expense of operating service that is not used.

The PRT system planned for Denver is much larger than any implemented to date and the RTD is in the forefront of the nation in studying this technology. The development project to be undertaken jointly by RTD and the Urban Mass Transportation Administration will be constructed near Broomfield to obtain further data and information on PRT technology including:

- Operating costs and vehicle management and routing strategies
- Vehicle size/speed/headway relationships
- Capital cost relationships, particularly considering guideway and vehicle costs, and
- Command and control techniques

The Development Project is scheduled to be completed by late 1976. By then, a clearer understanding of state and federal policies that affect transportation decisions will exist, including:

- Actions directed by the Colorado Air Pollution Control Commission and the Federal Environmental Protection Agency
- Gasoline costs and availability, and
- Automobile costs

These and other related policies will be used to modify the plan as necessary in order to ensure that the plan meets the current and projected needs of the Region.

Financing

The financing of the plan, approved by the area voters on September 7, 1973, consists of a half-cent sales tax to pay for operating expenses and the local share of the capital cost. Current legislation provides that the Urban Mass Transportation Administration will fund 80% as the federal share of the capital cost. A two mill property tax would be available if needed, to finance operating expenses.

With voter approval of the Public Transportation Plan, work can proceed on PRT location and design studies, the environmental impact analysis, completion of the study to evaluate alternative systems to the PRT and the PRT development project. Findings from any one of these studies may affect the implementation of the plan. As more information becomes available, the Joint Regional Planning Program will recommend appropriate modifications to the plan.

V. PLAN IMPLEMENTATION ACTIONS

Since 1971, the Joint Regional Planning Program has concentrated its efforts on developing a plan for the year 2000, and in developing a well qualified staff of professional engineers, urban planners, ecologists, transportation planners and economists.

These two objectives have now been met and the Joint Regional Planning Program can now focus its efforts on assisting local and state agencies implement the plan.

The objectives of this work include:

- Working with local governments in helping them understand regional and local transportation problems;
- Working with local governments in discussions with regional and state agencies with regard to short and long-term transportation investment decisions.
- Working with operating agencies in helping them estimate the travel demands to be accommodated on current and projected facilities; and
- Monitoring and re-evaluating the long-term transportation investment strategy in order to incorporate changes in anticipated growth, technology, funding programs and travel needs and desires.

In order to achieve the above objectives, the Joint Regional Planning Program will become involved in the following program areas:

Transportation Plan Implementation

Highway Plan Programming: Local governments currently do not know more than one year in advance when any of the highway projects shown on the Plan will be constructed. In order to allow local governments to better coordinate the construction of each project with other local programs, the JRPP will, during the 1973-74 Program, define each construction project in the Plan. Then, by 10-year increments, identify when that project will be implemented, as well as who will be responsible for construction. In addition, the JRPP will develop a recommended two-year construction program within the Denver Region for the Colorado Division of Highways.

Transit Plan Programming: Currently, Denver, Arvada, Boulder, and the Regional Transportation District all have proposed transit improvements within the Denver Region.

The JRPP will assume responsibility for coordinating these proposals, as well as ensuring that each local government has had an opportunity to express its views concerning the amount of transit service which each of the above agencies will make available to each local government.

Colorado Division of Highways Annual County Requests. Each year, counties request of the Colorado Division of Highways the projects they would like constructed the following year.

As a service to local government, the DRCOG will review each request in their Region in order that each requested project can be more readily integrated into the short-term plan.

Advanced Acquisition/Feasibility Studies: Most of the proposed freeways in the Plan will not be constructed for some time. Many of the problems associated with their construction can be reduced if actions are taken in the next few years.

It should be a responsibility of the JRPP to define what those actions are and what the alternatives are to taking each action.

Of particular concern are the following limited access facilities: Quebec, Santa Fe, Hampden, Kipling, as well as the following principal arterials: Alameda, 38th Avenue, Evans, and Orchard.

Technical Assistance and Local Planning: Transportation planning expertise developed at the regional level can assist local planners in evaluation of transportation impacts. The JRPP has developed several techniques which are applicable to the sub-regions, and could be applied to areas such as each county.

Impact analysis of major development on the local and regional highway networks would be one benefit. These analyses could then be used in zoning review, as well as project development.

In addition, the JRPP will be encouraged to evaluate and help develop local plans, on an advisory basis only, as requested by each affected local government.

National Transportation Study: Each January, before the next appropriation of the Federal Aid Highway Act, the U.S. Department of Transportation conducts a national study concerning the transportation needs and desires of the nation.

The findings of this study form the basis for the succeeding years' Congressional appropriations and procedures relative to transportation in the nation.

In Colorado, the study has been used to identify basic relationships such as:

- How much highway funding should go to Denver and how much to the remainder of the State;
- How should the monies be split between modes; and
- How would the monies be split between jurisdictions within the Denver Region?

Because of the direct impact that these questions have on local governments, the DRCOG has been directly involved with and has presented its concerns to the State regarding the study.

The Denver Regional Council of Governments should increase its active participation in presenting local governments concerns with the State relative to transportation investment decisions.

Clean Air Act of 1970. The Colorado Department of Health, under guidelines of the Environmental Protection Agency under authority of the Clean Air Act of 1970, has developed a transportation plan which will directly affect local governments in the Denver Region.

The JRPP plans to use its expertise in transportation and land use planning in evaluation of this plan, and preparing recommendations in order to ensure that the needs and desires of local government are considered in the implementation of the air quality standards of the Act.

Continuing Study

This report represents one of the products of the coordinated study of land use and transportation for the Denver Region. The Joint Regional Planning Program was organized in conformance with the 1962 Highway Act and the 1964 Mass Transit Act to provide for continuing transportation planning that will be responsive to the needs of the Denver Region and to changes in the development of the area.

The reorganization of the Joint Regional Planning Program administrative framework will make it possible for meaningful, continuous, comprehensive transportation planning to be carried out. It will also help to provide for the orderly implementation of the plan elements in a manner consistent with the policies implicit in the plans.

Land Use Plan Implementation

There are four major areas where future work must take place in overall comprehensive planning. The first area specifically deals with the implementation and public awareness of the Plan. Secondly, substantial effort must be expended in continual efforts at monitoring the changing area and utilizing that information for reappraisal of existing plans.

Planning must seek to refine and reappraise its recommendations and to bring into focus differences between various functional regional plans and overall comprehensive plans. Because transportation was a major focus of the Joint Regional Planning Program, those functional plans are already integrated with the overall land use and growth scheme. Such other functional area plans as sewer systems, drainage, water, community facilities, and housing must be integrated into the overall growth concepts associated with the recommended Land Use Plan.

Lastly, regional planning as a function must remain aware of changing national, state, and local concerns in planning, such that it remains able to react or provide direction in new areas of concern that will utilize the public planning expertise.

Implementation Strategy: Substantial analysis has already been carried out in the development of an implementation strategy. The results of the initial work suggest that to be effective, efforts at implementing regional comprehensive plans must be spread across various programmatic areas. Efforts must be expended in developing effective communication of ideas and problems from the regional level to all other levels of government.

Legislation as an arena of implementation is becoming increasingly important. Any effective implementation program must address the influence of legislation, ordinances and regulations affecting the Plan at all levels of government.

Efforts to implement plans, particularly at a regional level, must be broadly based on cooperation between both levels of government as well as the public and private sectors.

Fiscal policy or patterns of expenditures on capital improvements also must be influenced. Ultimately, priority setting in terms of regional expenditures must be addressed. In the short term, however, efforts should be directed toward the use of fiscal expenditures as a policy tool in terms of time phasing, and in terms of influencing the direction of growth.

The JRPP will become immediately involved in a comprehensive effort to implement the Land Use Plan. It will become active in attempts to create or influence state legislation. JRPP will expend efforts to build strong cooperation between the various levels of government.

The JRPP already is analyzing regional service and activity expenditure patterns. A regional fiscal program for the implementation of plans will be recommended.

Implementation Awareness: Perhaps the most effective implementation strategy for any regional plan is a substantial public information program. That program must have several elements to be totally effective. A capability must exist both for formal and informal dissemination of information concerning the recommended plans and programs.

Programmatically, this capability translates into well developed presentation techniques, the availability of well designed graphics and visual aids, well developed technical and general written documentations and the continued availability of pertinent information.

The JRPP has developed various public presentation tools and programs and will be actively presenting plans and programs publically and through various advisory committees. Through this dissemination of information concerning the plans, the JRPP hopes to influence decisions effecting the implementation of the plans.

Through its expanding Local Planning Assistance Program, DRCOG will be available to aid local governments in general planning problems or those problems specifically concerned with regional planning as it affects local communities.

Monitoring: To be in a position to evaluate proposals against the plans, to evaluate recommended changes in the plans, or to reappraise the plan, a well developed monitoring, analysis and data reduction capability must exist.

This capability translates into a sophisticated and well developed research and analysis staff. Techniques must be developed to monitor, estimate and forecast key planning parameters such as population growth and migration, social welfare, health and economic indicators, as well as the total range of normal public facility and construction. The data must not only be correctly monitored and forecast, but it must be constantly kept current and reduced to a form which allows its utilization in the constant re-evaluation of plans and programs.

The JRPP has developed this capability. It will comment on proposals affecting the plans. Using the review functions of the JRPP and in close liaison with local governments, the Program will seek to point out potential differences in plans and programs affecting the JRPP Plans.

Reappraisal and Change: To remain relevant, recommended plans must continually be re-evaluated and revised based upon new information of changing situations. The planning process also must be in a position to respond to conflicts between recommended plans and other policy plans or documents.

The ability to re-evaluate and revise plans must take the form of the effective utilization of the current information available through the monitoring and analytic work of the previous section. Keen perception of new issues and potential plan conflicts must always be available. Other functional area plans as they become available must be technically compared to recommended plans. Conflicts must be identified and resolution of conflicts must be accomplished.

The JRPP will appraise changing plans and situations. It will analyze each regional plan under its jurisdiction and find solutions to plan conflicts. As a normal function, plans will be reviewed yearly in relation to new data and events.

FOOTNOTES

¹ Detailed descriptions of the technical development of the Land Use, Highway and Public Transportation Plans can be found in the following reports:

Growth Alternatives, Denver Regional Council of Governments, Denver, 1972.

Transportation Systems Report, Draft, Denver Regional Council of Governments, Denver, 1973.

Transportation Systems Report, Addendum One, Draft, Denver Regional Council of Governments, Denver, 1973.

Highway Construction Needs - Denver Region, Draft, Denver Regional Council of Governments, Denver, 1973.

Phase One - A Concept, Regional Transportation District, Denver, 1972.

Summary Report, Regional Transportation District, Denver, 1973.

Technical Report One, Preliminary System Design, Regional Transportation District, Denver, 1973.

Technical Report Two, PRT Route Analysis, Regional Transportation District, Denver, 1973.

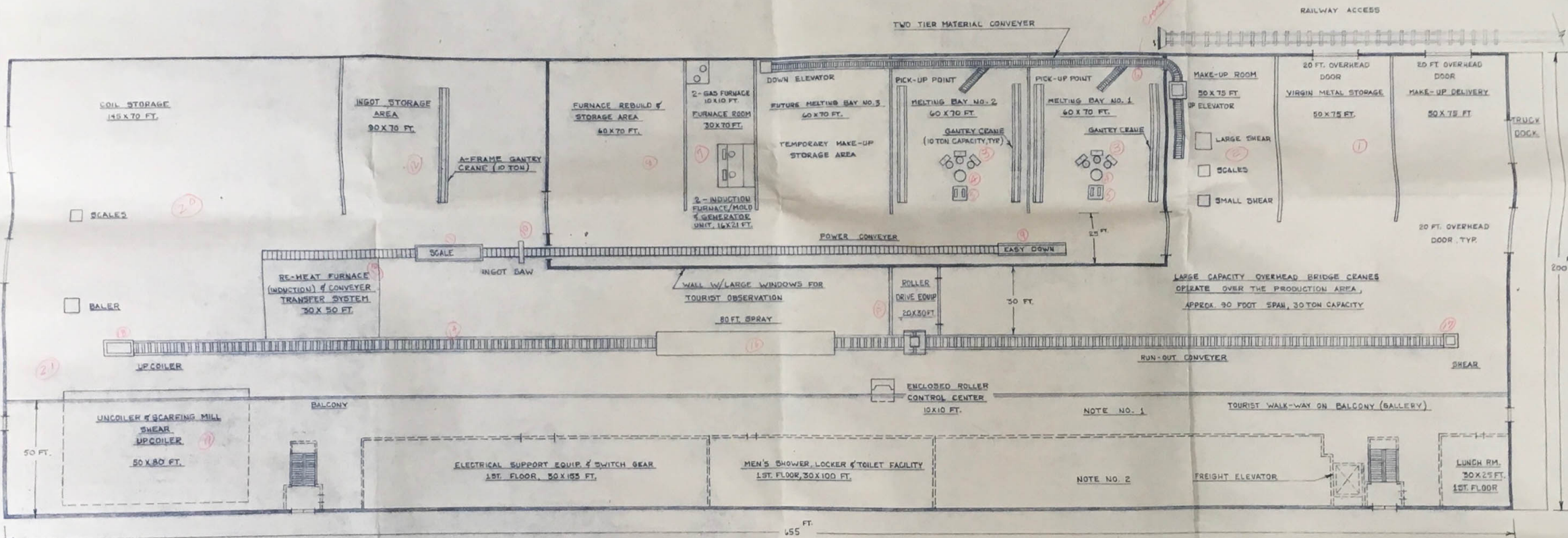
Technical Report Three, Costs, Benefits, Financing and Implementation, Regional Transportation District, Denver, 1973.

² Includes Adams, Arapahoe, Boulder and Jefferson Counties, and the City and County of Denver.

³ Parks and Recreation-Open Space Development Program, Denver SMSA, Denver Regional Council of Governments, Denver, 1970. Supplement: 1970 Parks and Recreation-Open Space Development Program, Denver Regional Council of Governments, 1973.

Collection of Documents

Series of "New Mount Criteria" Space Survey drawings 1972



NOTES

1. THE BALCONY LEVEL WILL CONTAIN THE FOLLOWING:
 - a. MELTING SUPERINTENDENT'S OFFICE, APPROX. 500 SQ. FT.
 - b. MELTING SUPERINTENDENT'S OFFICE STAFF, APPROX. 1000 SQ. FT.
 - c. CONFERENCE ROOM, APPROX. 500 SQ. FT.
 - d. MEN AND WOMEN'S TOILET FACILITIES.
 - e. CUSTODIAN STORAGE AREA.
 - f. STORAGE & GROWTH.
 - g. GALLERY WALKWAY TO BE INDEPENDENT OF ADMINISTRATION AREA.
2. FUTURE SHOPS & STORAGE AS REQUIRED, 1ST. FLOOR
3. RUN-OUT CONVEYER LENGTH BASED ON THE FOLLOWING:
 - a. INGOT DIMENSIONS ARE 5 INCHES THICK, 32 INCHES WIDE AND 25 FEET LONG
 - b. NEXT TO LAST RUN, SHEET THICKNESS IS APPROX. 0.55 INCHES (REDUCTION FACTOR OF 5/0.55 OR 9.09) REQUIRING 227 FEET OF CONVEYER.
 - c. LAST RUN THICKNESS SHALL BE APPROX. 0.375 INCHES (REDUCTION FACTOR OF 5/0.375 OR 13.33) REQUIRING 333 FEET OF CONVEYER.
4. TOTAL 1ST FLOOR AREA 131,000 SQ. FT.

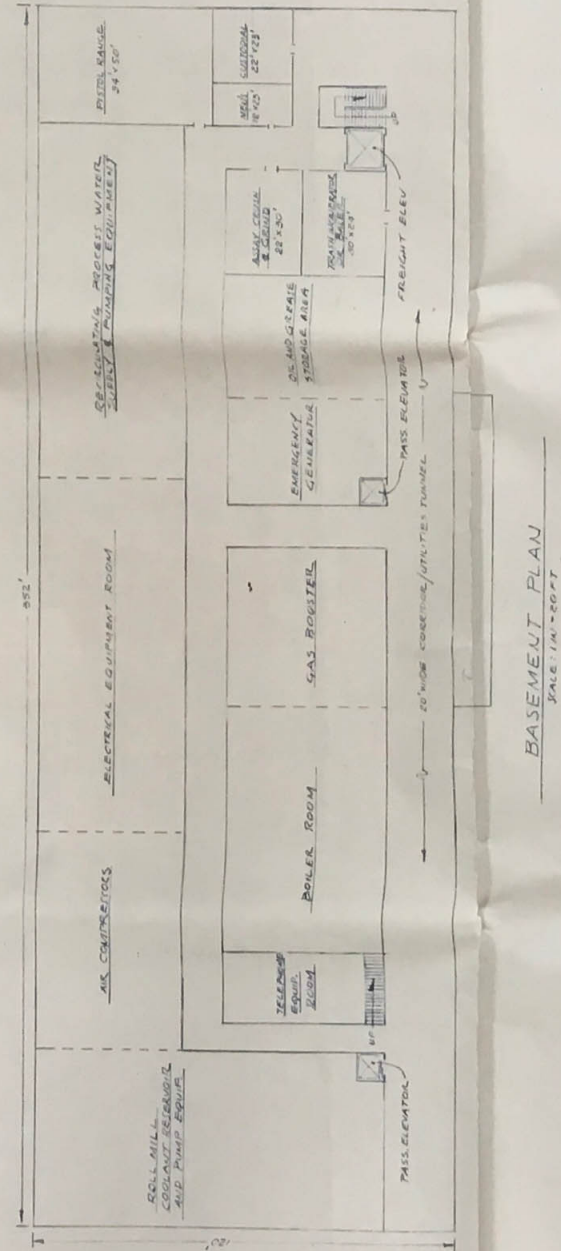
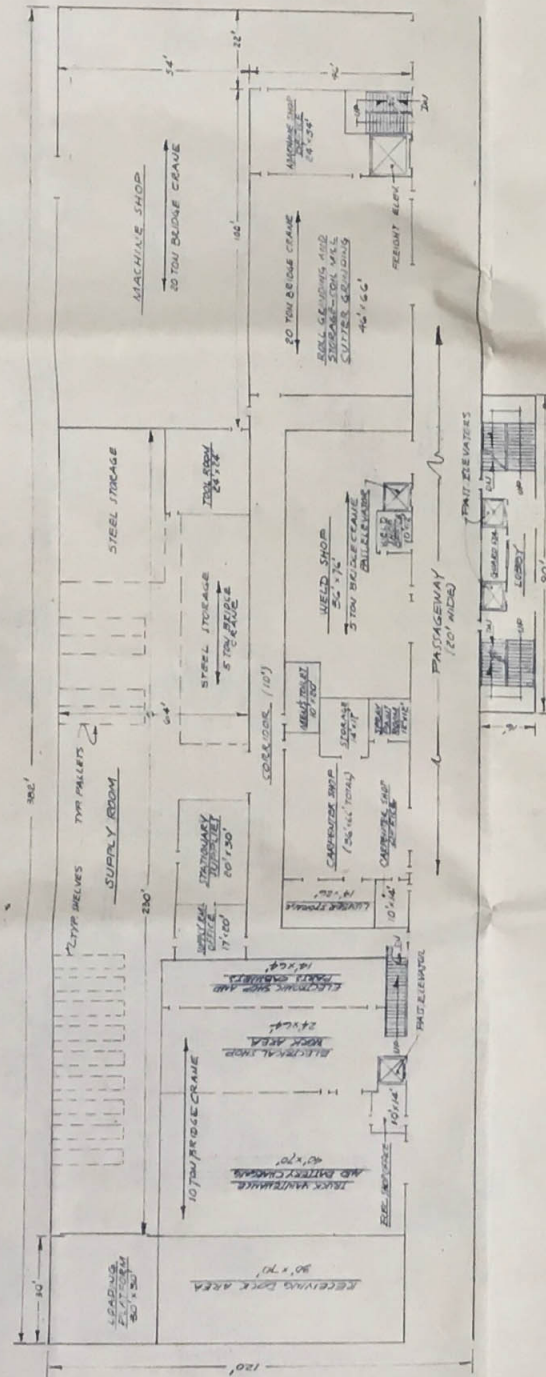
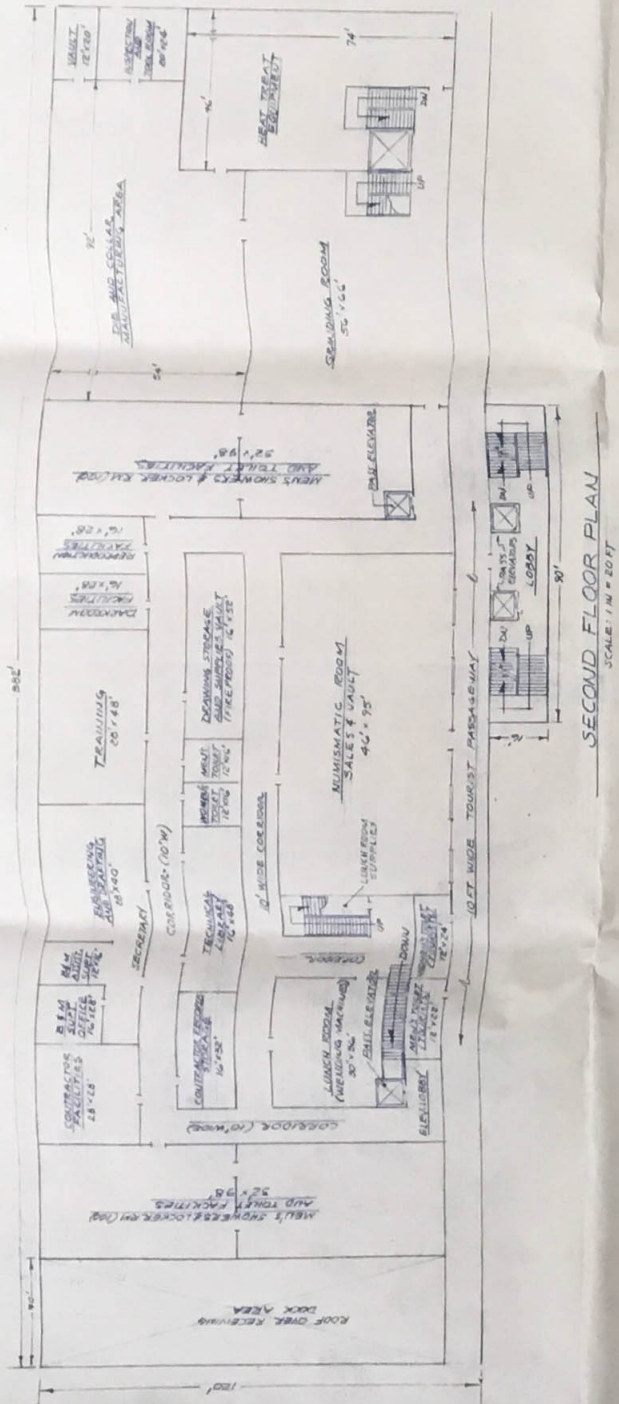
STRIP PRODUCTION FACILITY

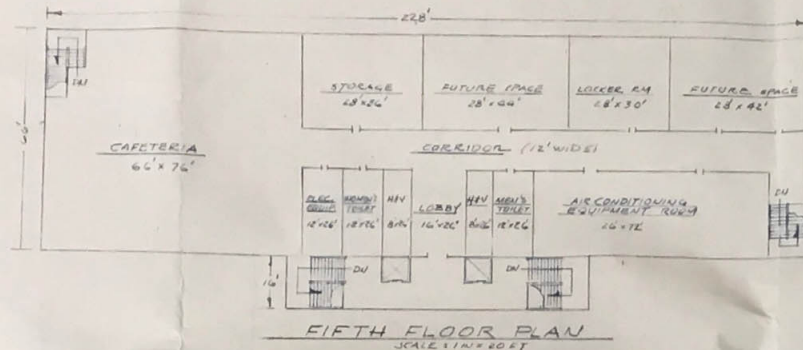
SCALE: 1 IN. = 20 FT.

PRELIMINARY SPACE SURVEY

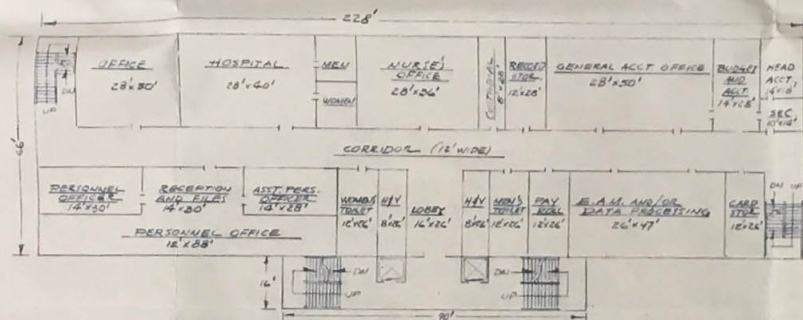
STRIP PRODUCTION FACILITY

SCALE: 1 IN. = 20 FT.	APPROVED BY:	DRAWN BY NEAL
DATE: FEB. 1972	<i>[Signature]</i>	REVIEWED:
U.S. DENVER MINT		
NEW MINT CRITERION PLATE NO. 1		PG. 1 OF 1

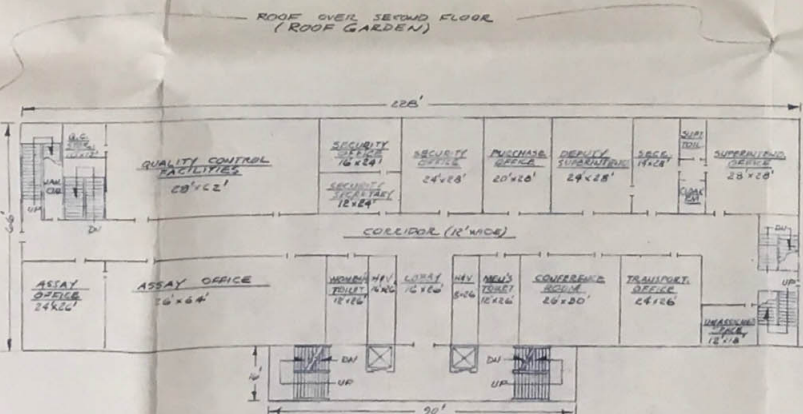




FIFTH FLOOR PLAN
SCALE: 1/4" = 20' ET



FOURTH FLOOR PLAN
SCALE: 1/4" = 20' ET



THIRD FLOOR PLAN
SCALE: 1/4" = 20' ET

PRELIMINARY SPACE SURVEY

ADMINISTRATION/MAINTENANCE BLDG.

SCALE: 1/4" = 20' ET APPROVED BY: [Signature] DRAWN BY: J.M. [Signature]

DATE: MARCH, 1972 U.S. DENVER MINT

NEW MINT CRITERION PLATE NO. 3 PAGE 2 OF 2

Diary of "New Mount Catewa" Spoor Survey Clearing 1872

Series of Blue Print Copies of New Mount Faculty drawings

CRANE SLAB

REMOVED ONLY DOOR

SEE NOTE 1

GLASS (1/2")

FEEDER ELEV

SUSPENDED TRUSS GALLERY
SEE 1ST FLOOR PLAN FOR
COMPLETE ROUTE

BALCONY PLAN
SCALE 1" = 20'

STORAGE AREA

TRUCK ELEV. 3000

WIND UP BALCONY
TRUCK ELEV. 3000
SEE PLAN ABOVE

RECEIVING STATION/REEL SURVEY AREA
FOR 12.5% SURVEY & THE BREAK-DOWN AREA
25' x 150'

LOBBY ROOM
25' x 60'

ALUM. SHEDS 12' x 12' x 10'

SEE NOTE 4

TRUCK ELEV. 3000

HANDLED CARL STEEL

HOT BREAK-DOWN MILL

BRIDGE CRANE

RUN OUT CONVEYER

SEE NOTE 3

WATER GUN

CHASSIS CONVEYER

TRUCK GALLERY (TRUCK ELEV.)

SCALE

SCALE

NOTE: BRIDGE CRANE 30' x 12'

TECHNICAL WORKS
20' x 12'

PAINTS AND OILS
FLOOR (1/2")

PAINTS AND OILS
FLOOR (1/2")

PAINTS AND OILS
FLOOR (1/2")

PAINTS AND OILS
FLOOR (1/2")

PAINTS AND OILS
FLOOR (1/2")

PAINTS AND OILS
FLOOR (1/2")

PAINTS AND OILS
FLOOR (1/2")

PAINTS AND OILS
FLOOR (1/2")

PAINTS AND OILS
FLOOR (1/2")

PAINTS AND OILS
FLOOR (1/2")

PAINTS AND OILS
FLOOR (1/2")

PAINTS AND OILS
FLOOR (1/2")

PAINTS AND OILS
FLOOR (1/2")

PAINTS AND OILS
FLOOR (1/2")

PAINTS AND OILS
FLOOR (1/2")

PAINTS AND OILS
FLOOR (1/2")

PAINTS AND OILS
FLOOR (1/2")

PAINTS AND OILS
FLOOR (1/2")

PAINTS AND OILS
FLOOR (1/2")

PAINTS AND OILS
FLOOR (1/2")

NOTES

1. THE BALCONY LEVEL WILL CONTAIN THE FOLLOWING:
A. MELTING EQUIPMENT (TRUCK ELEV. 3000 FT)
B. MELTING EQUIPMENT (TRUCK ELEV. 3000 FT)
C. CONFERENCE ROOM - 12' x 12' x 10'
D. MEATS & ROASTS - 12' x 12' x 10'
E. CUSTOMER STORAGE AREA
F. STORAGE AND STORAGE
2. THIS SPACE WILL CONTAIN THE FOLLOWING:
A. MELTING EQUIPMENT (TRUCK ELEV. 3000 FT)
B. MELTING EQUIPMENT (TRUCK ELEV. 3000 FT)
C. CONFERENCE ROOM - 12' x 12' x 10'
D. MEATS & ROASTS - 12' x 12' x 10'
E. CUSTOMER STORAGE AREA
F. STORAGE AND STORAGE
3. RUN OUT CONVEYER LENGTH BASED ON THE FOLLOWING:
A. MELTING EQUIPMENT (TRUCK ELEV. 3000 FT)
B. MELTING EQUIPMENT (TRUCK ELEV. 3000 FT)
C. CONFERENCE ROOM - 12' x 12' x 10'
D. MEATS & ROASTS - 12' x 12' x 10'
E. CUSTOMER STORAGE AREA
F. STORAGE AND STORAGE
4. MELTING EQUIPMENT (TRUCK ELEV. 3000 FT)
A. MELTING EQUIPMENT (TRUCK ELEV. 3000 FT)
B. MELTING EQUIPMENT (TRUCK ELEV. 3000 FT)
C. CONFERENCE ROOM - 12' x 12' x 10'
D. MEATS & ROASTS - 12' x 12' x 10'
E. CUSTOMER STORAGE AREA
F. STORAGE AND STORAGE
5. AIR CLEANING EQUIPMENT FOR MELTING AREA WILL BE LOCATED WITH OVER THE AREA
6. TRUCK ELEV. 3000 FT IS 25' x 150' x 10' FT
7. TRUCK BALCONY AREA (12' x 12' x 10' FT)

FIRST FLOOR PLAN

SCALE 1" = 20'

PRELIMINARY SPACE SURVEY

STRIP PRODUCTION FACILITY

SCALE 1" = 20'

DATE: 10/1/72

U.S. DENVER MINT

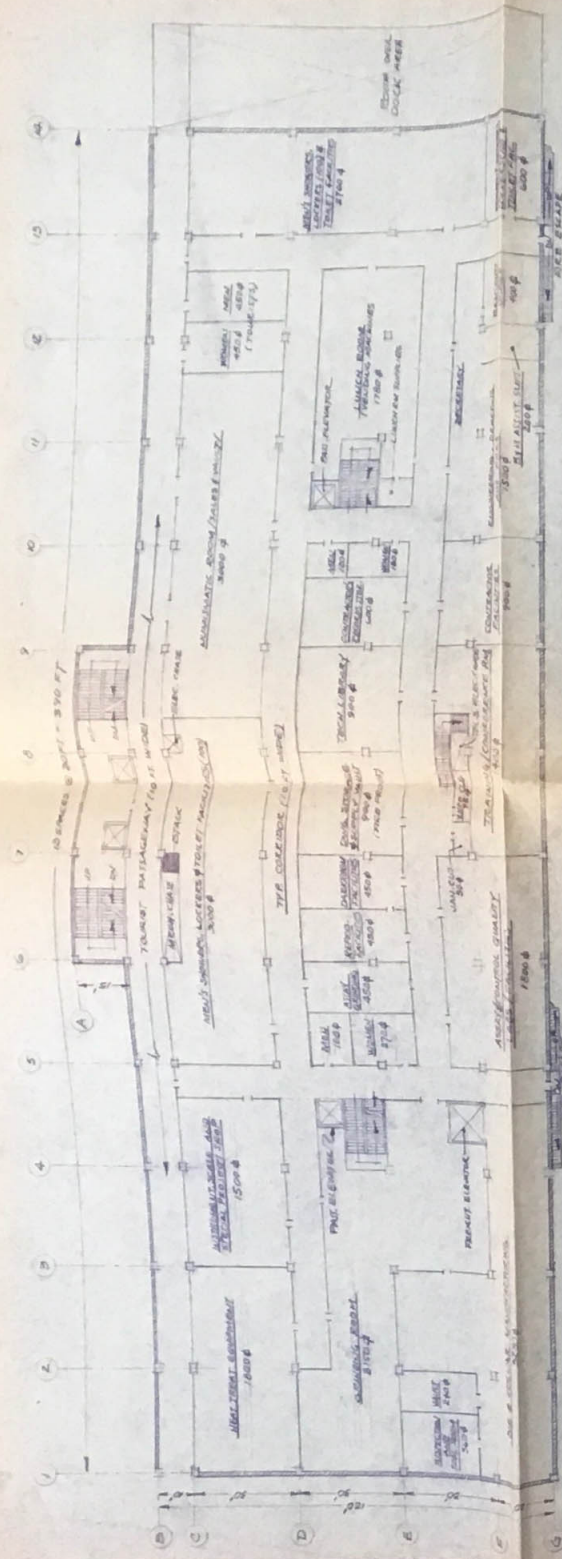
NEW MINT CRITERION PLATE NO. 1

NEW B

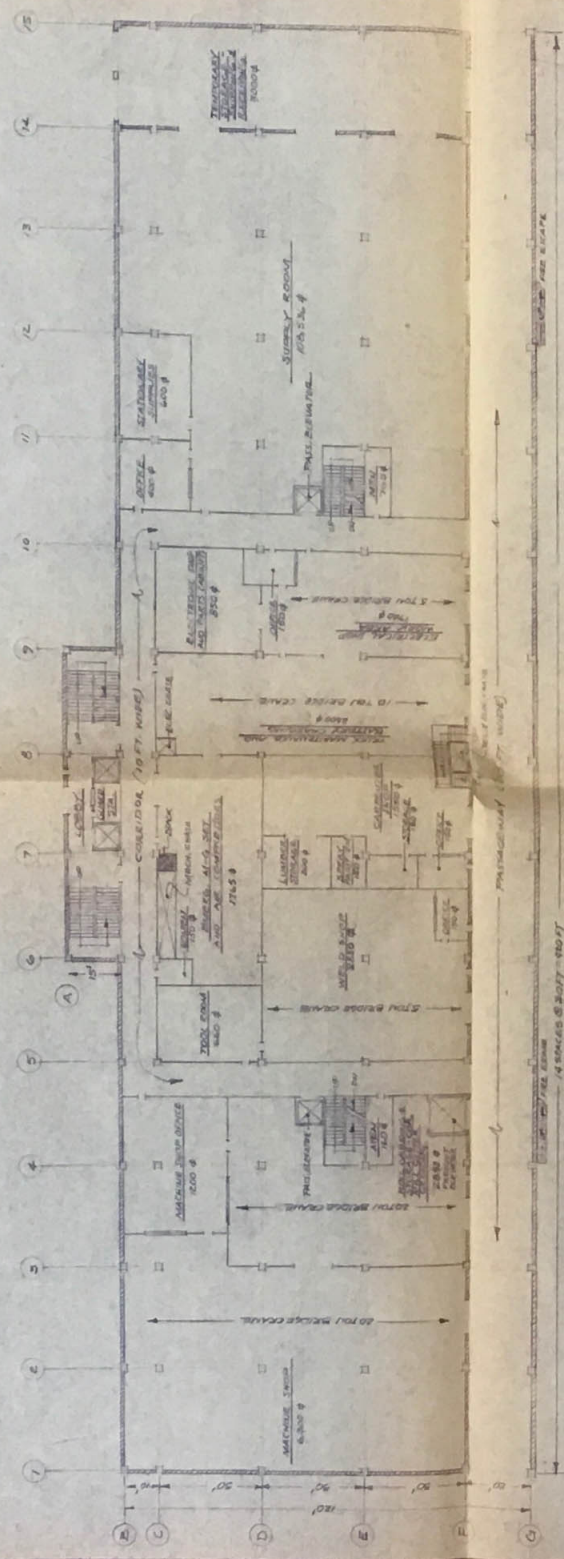
NEW B

NEW B

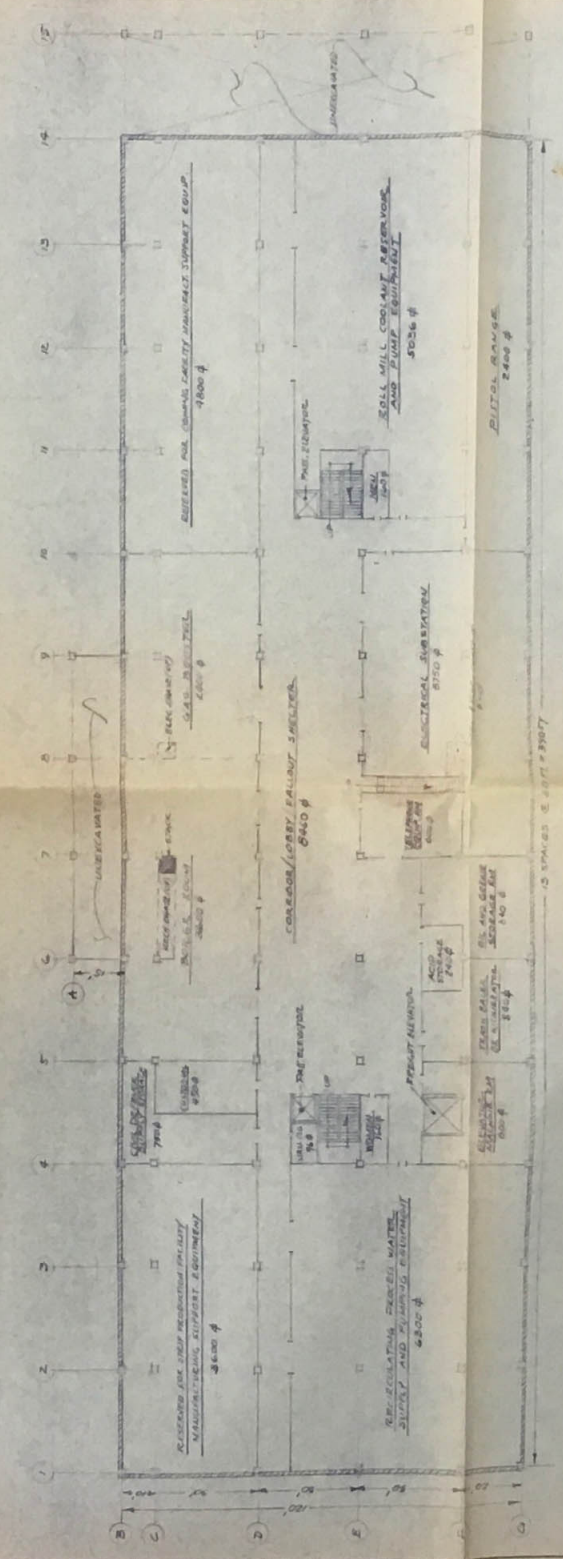
NEW B



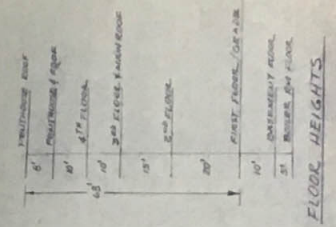
SECOND FLOOR PLAN
SCALE: 1/4" = 10' 0"



FIRST FLOOR PLAN
SCALE: 1/4" = 10' 0"



BASEMENT PLAN
SCALE: 1/4" = 10' 0"



AREA (SQ. FT.)	AREA (SQ. FT.)
1st FLOOR	17,750
2nd FLOOR	17,750
3rd FLOOR	17,750
TOTAL	53,250

PRELIMINARY SPACE SURVEY

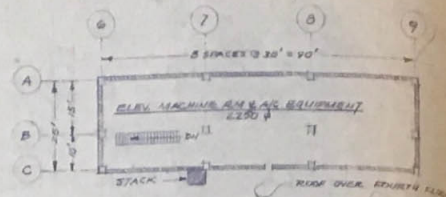
ADMINISTRATION/MAINTENANCE BLDG.

DATE: MARCH, 1972

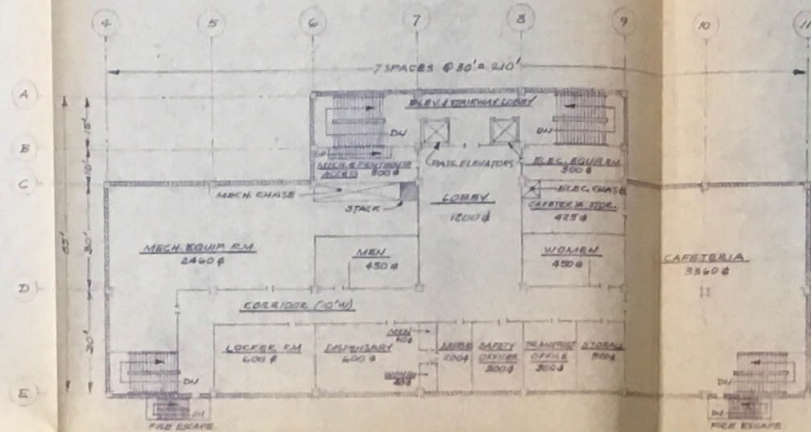
U.S. DENVER MINT

NEW MINT CRITERION PLATE 10.8

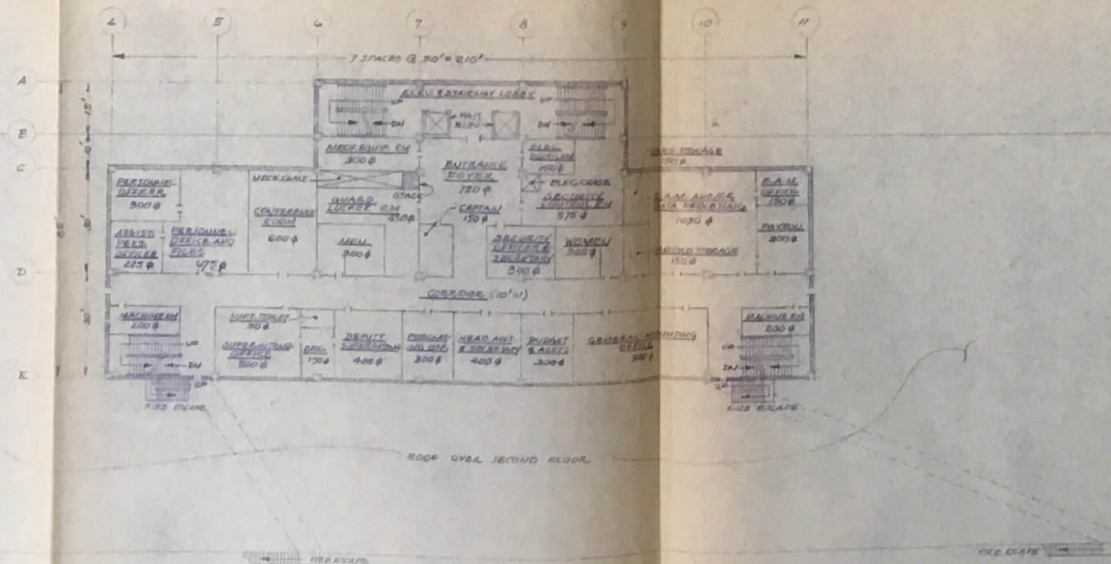
Page 1 of 2



PENTHOUSE PLAN
SCALE: 1" = 20'

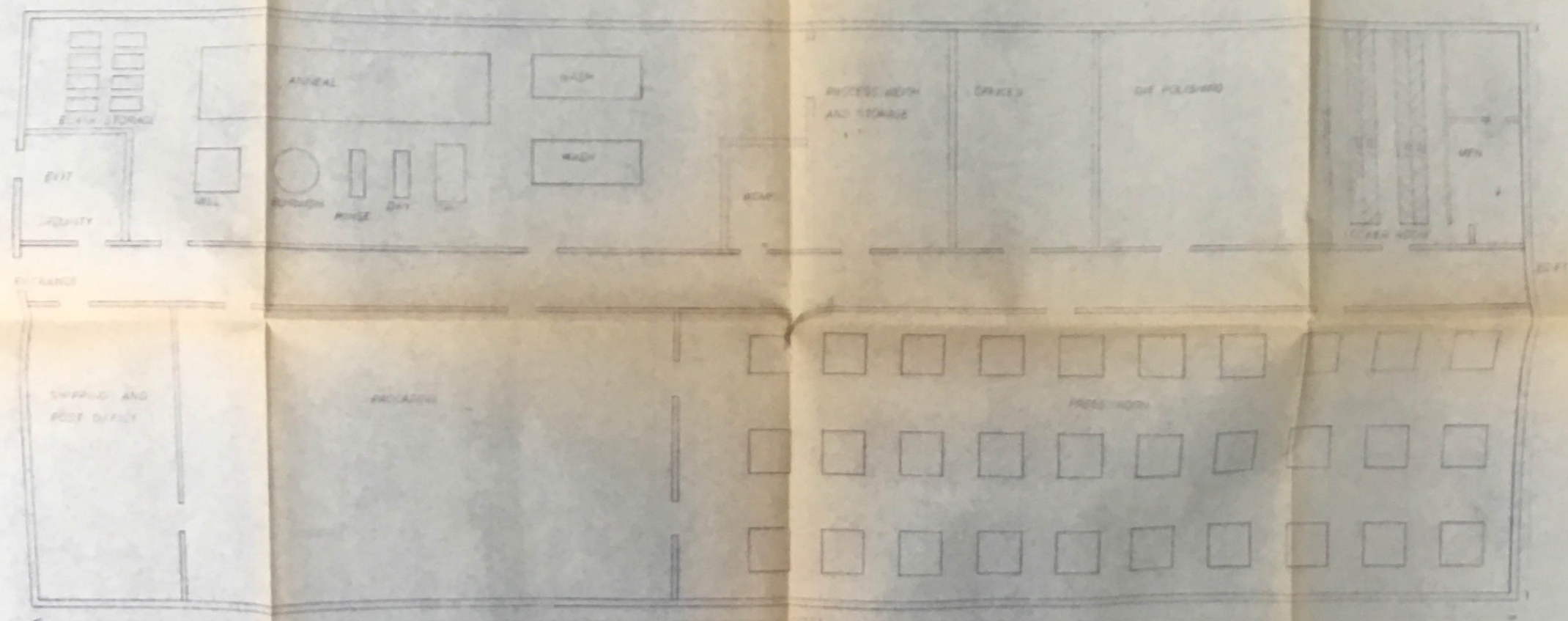


FOURTH FLOOR PLAN
SCALE: 1" = 20'



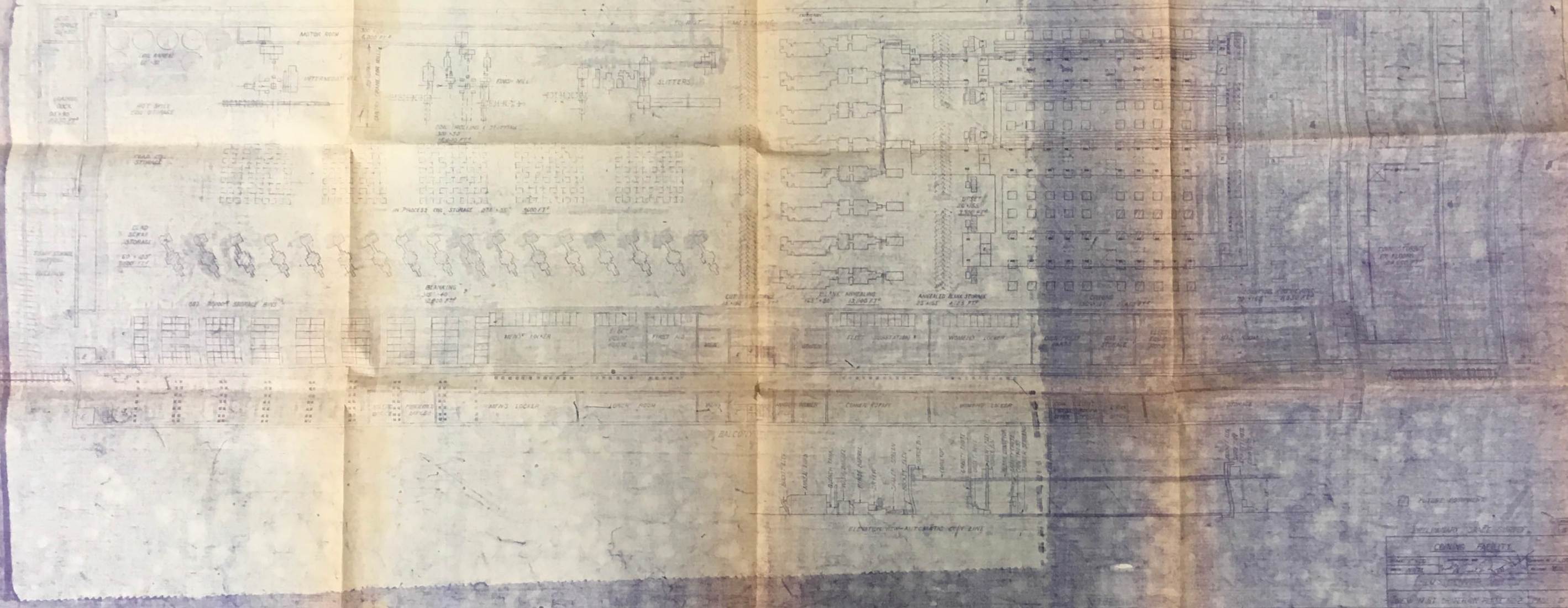
THIRD FLOOR PLAN
SCALE: 1" = 20'

PRELIMINARY SPACE SURVEY		REV B
ADMINISTRATION/MAINTENANCE BLDG.		
SCALE: 1" = 20' 0"	APPROVED BY: [Signature]	DRAWN BY: [Signature]
DATE: 10/1/78	BY: [Signature]	REVIEW: [Signature]
U.S. DENVER MINT		
NEW MINT CRITERION PLATE 403		DRAWING NUMBER PAGE 2 OF 2

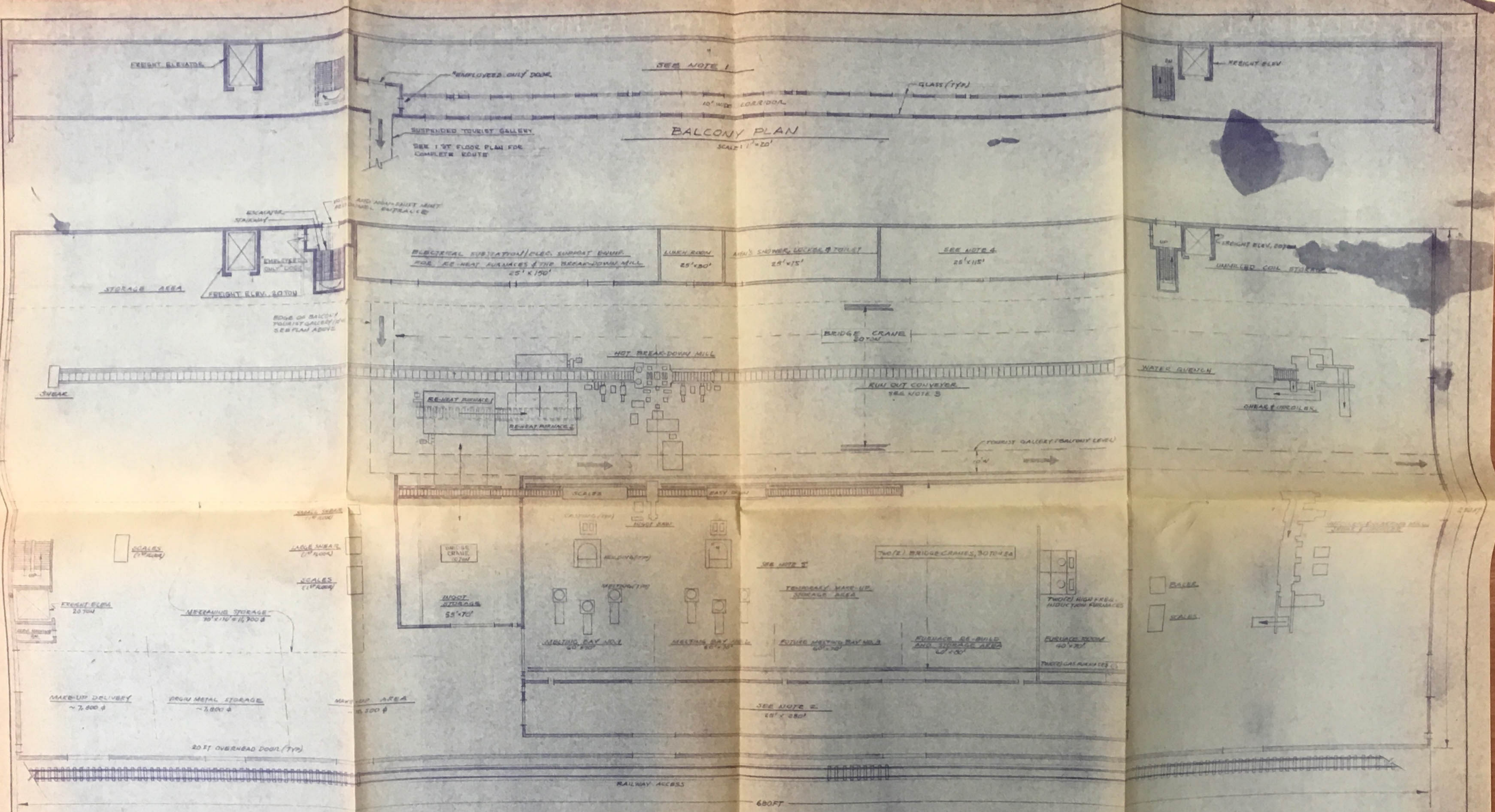


PRELIMINARY SPACE SURVEY

PEOPLE'S COIN FACILITY	
DATE: 10/10/72	BY: J. J. JONES
DATE: 10/10/72	BY: J. J. JONES
NEW YORK STATE 100-1	



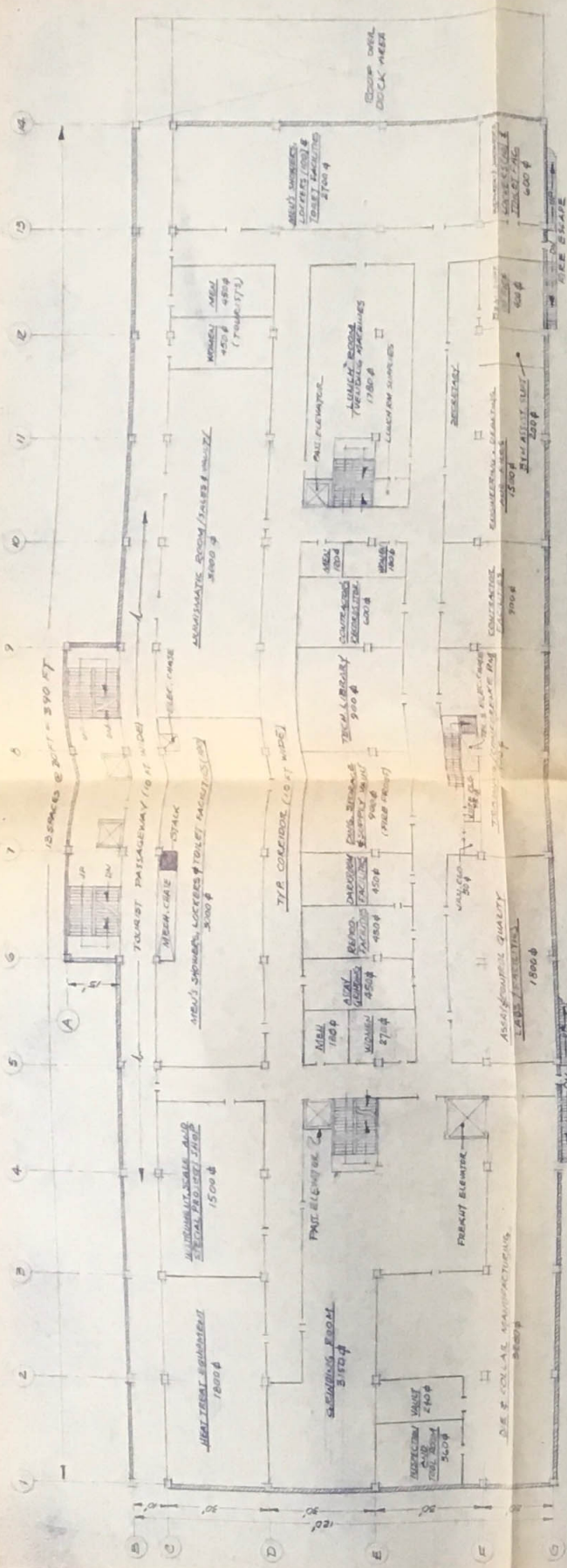
FLOOR PLAN	
COIL MILL	
DATE	1952
BY	J. H. HARRIS
FOR	U.S. STEEL CORP.
SCALE	1/4" = 1'-0"
NO.	100



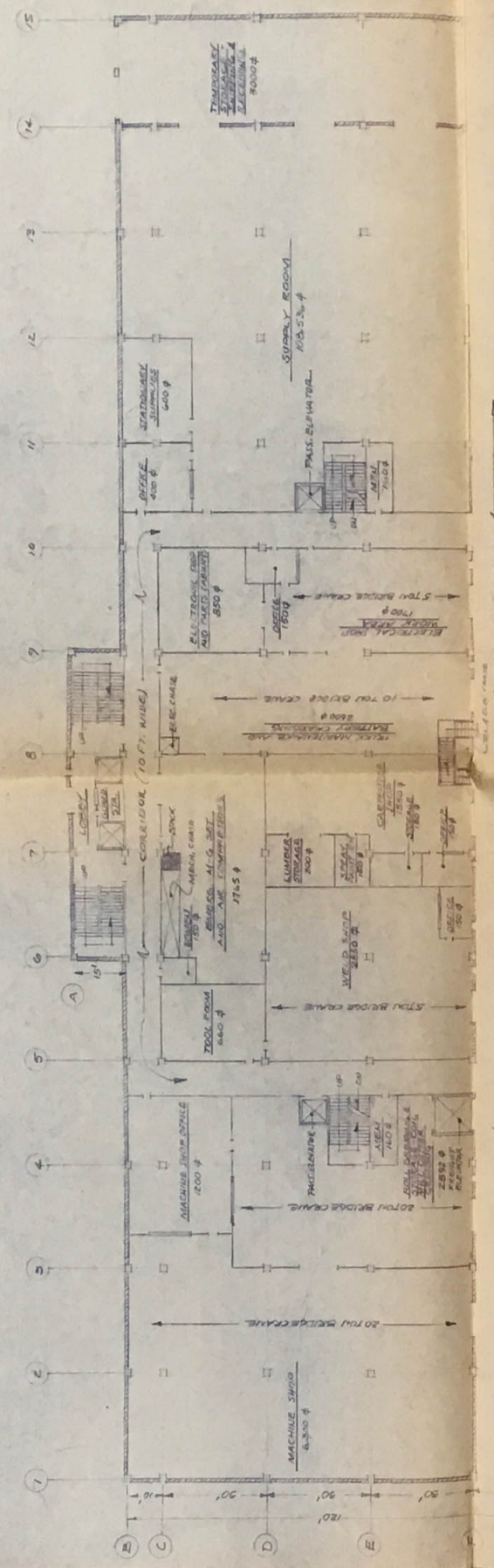
PRELIMINARY SPACE SURVEY

STRIP PRODUCTION FACILITY

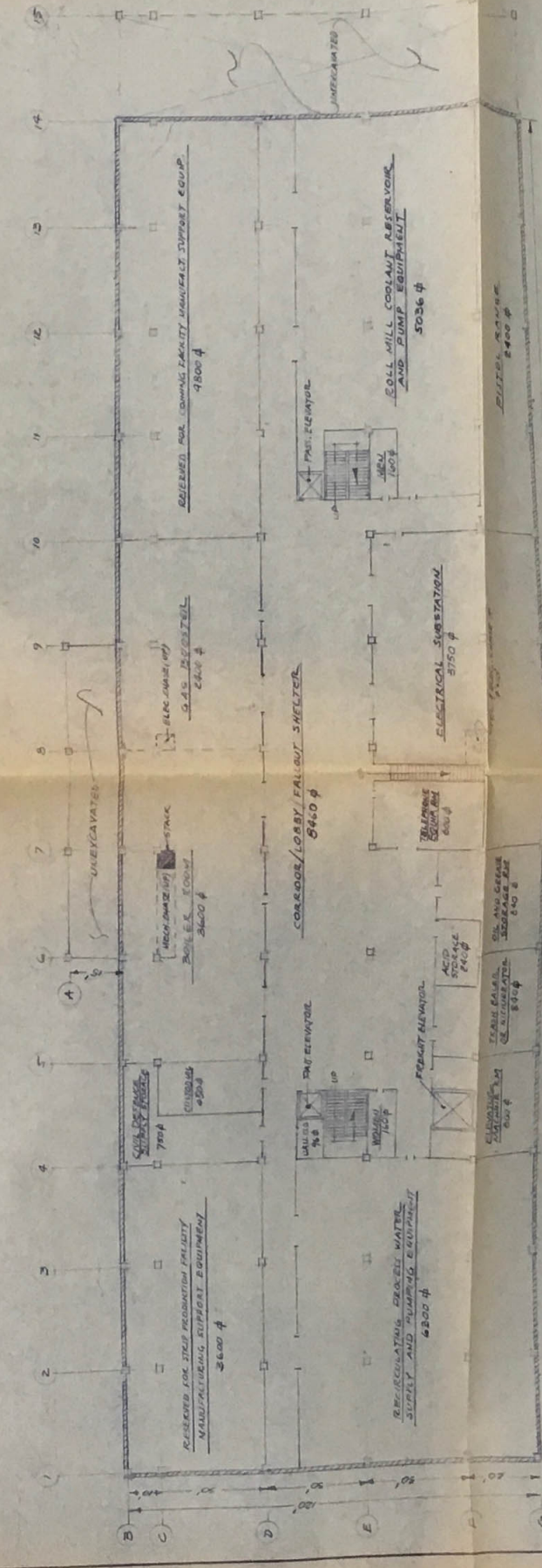
SCALE: 1/4" = 20'	APPROVED BY: <i>[Signature]</i>	DRAWN BY: <i>[Signature]</i>
DATE: 10/10/70	DATE: 10/10/70	DATE: 10/10/70
U.S. DENVER MINT		
NEW MINT CENTER PLATE NO. 1		



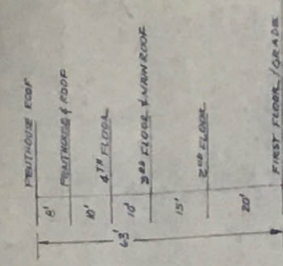
SECOND FLOOR PLAN
SCALE: 1/4" = 20' FT



FIRST FLOOR PLAN
SCALE: 1/4" = 20' FT



BASEMENT PLAN
SCALE: 1/4" = 20' FT



FLOOR HEIGHTS

AREA (SQ. FT.)	AREA (SQ. FT.)
RECEPTION	1500
OFFICE	400
STORAGE	600
ELECTRICAL	1000
TELEPHONE	1000
STORAGE	600
ELECTRICAL	1000
STORAGE	600
RESTROOM	100
TOILET	100
ELECTRICAL	1000
STORAGE	600
TOTAL	17000

SEE PAGE 1 OF 2 OF THIS DRAWING FOR THE PLANS OF 3RD, 4TH, 5TH FLOORS AND THE PENITENT.

PRELIMINARY SPACE SURVEY

ADMINISTRATION/MAINTENANCE BLDG.

SCALE: 1/4" = 20' FT

DATE: MARCH, 1972

U.S. DENVER MINT

NEW MINT CRITERION PLATE NO. 3

REV. B

APPROVED BY: [Signature]

DRAWN BY: [Signature]

REVIEWED BY: [Signature]

DATE: [Signature]

REVISIONS:

1. [Signature]

2. [Signature]

3. [Signature]

4. [Signature]

5. [Signature]

6. [Signature]

7. [Signature]

8. [Signature]

9. [Signature]

10. [Signature]

11. [Signature]

12. [Signature]

13. [Signature]

14. [Signature]

15. [Signature]

16. [Signature]

17. [Signature]

18. [Signature]

19. [Signature]

20. [Signature]

21. [Signature]

22. [Signature]

23. [Signature]

24. [Signature]

25. [Signature]

26. [Signature]

27. [Signature]

28. [Signature]

29. [Signature]

30. [Signature]

31. [Signature]

32. [Signature]

33. [Signature]

34. [Signature]

35. [Signature]

36. [Signature]

37. [Signature]

38. [Signature]

39. [Signature]

40. [Signature]

41. [Signature]

42. [Signature]

43. [Signature]

44. [Signature]

45. [Signature]

46. [Signature]

47. [Signature]

48. [Signature]

49. [Signature]

50. [Signature]

51. [Signature]

52. [Signature]

53. [Signature]

54. [Signature]

55. [Signature]

56. [Signature]

57. [Signature]

58. [Signature]

59. [Signature]

60. [Signature]

61. [Signature]

62. [Signature]

63. [Signature]

64. [Signature]

65. [Signature]

66. [Signature]

67. [Signature]

68. [Signature]

69. [Signature]

70. [Signature]

71. [Signature]

72. [Signature]

73. [Signature]

74. [Signature]

75. [Signature]

76. [Signature]

77. [Signature]

78. [Signature]

79. [Signature]

80. [Signature]

81. [Signature]

82. [Signature]

83. [Signature]

84. [Signature]

85. [Signature]

86. [Signature]

87. [Signature]

88. [Signature]

89. [Signature]

90. [Signature]

91. [Signature]

92. [Signature]

93. [Signature]

94. [Signature]

95. [Signature]

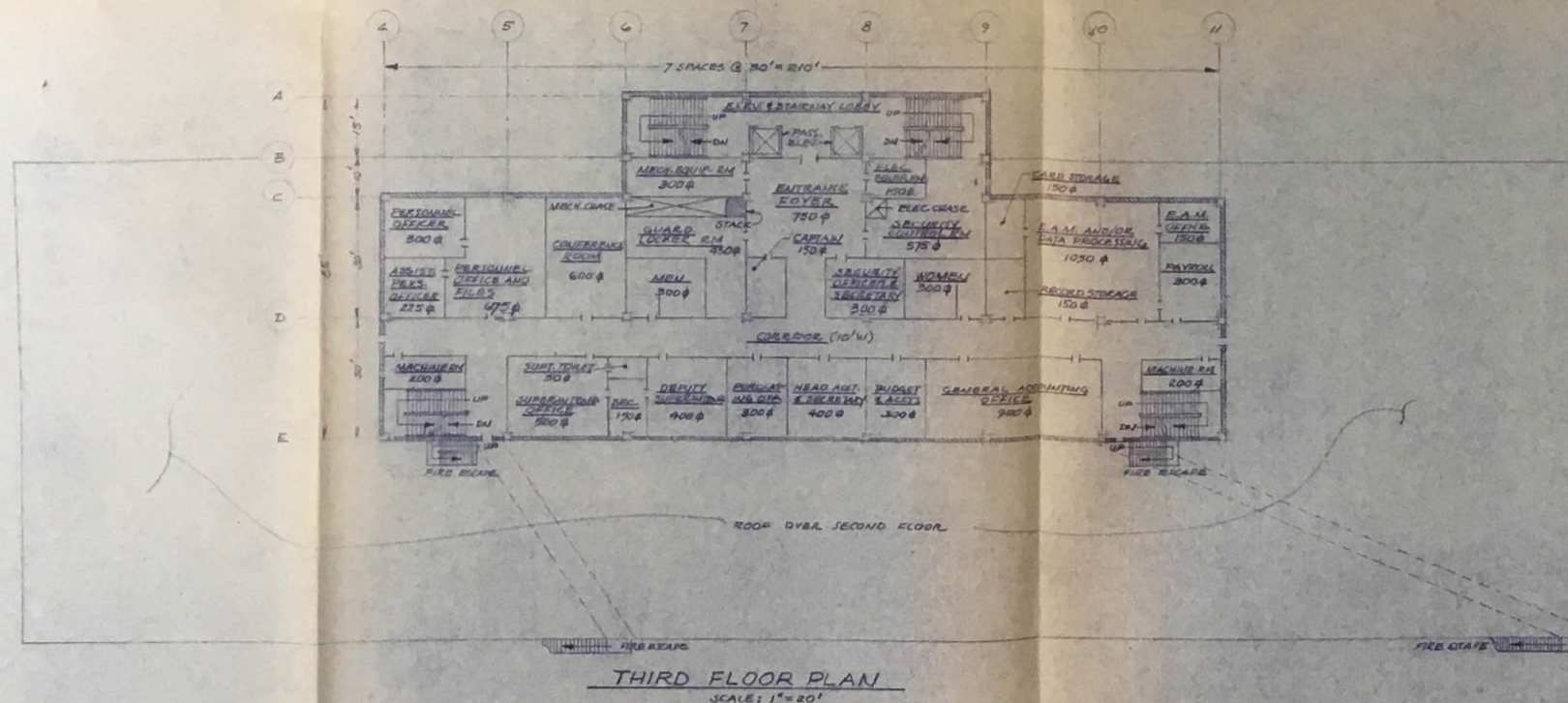
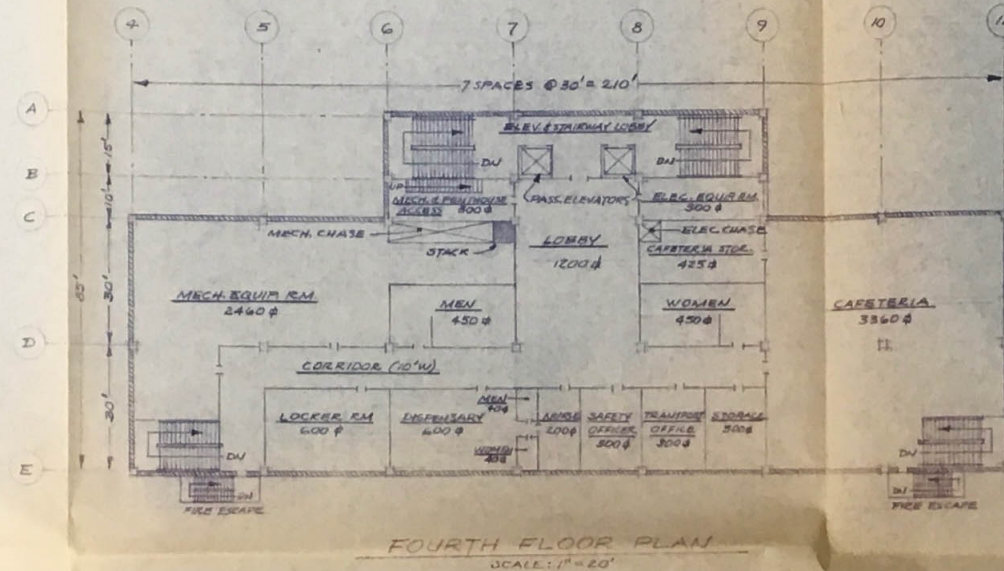
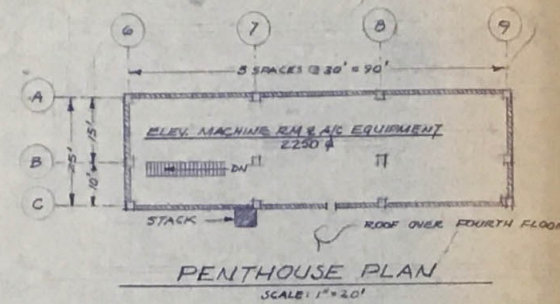
96. [Signature]

97. [Signature]

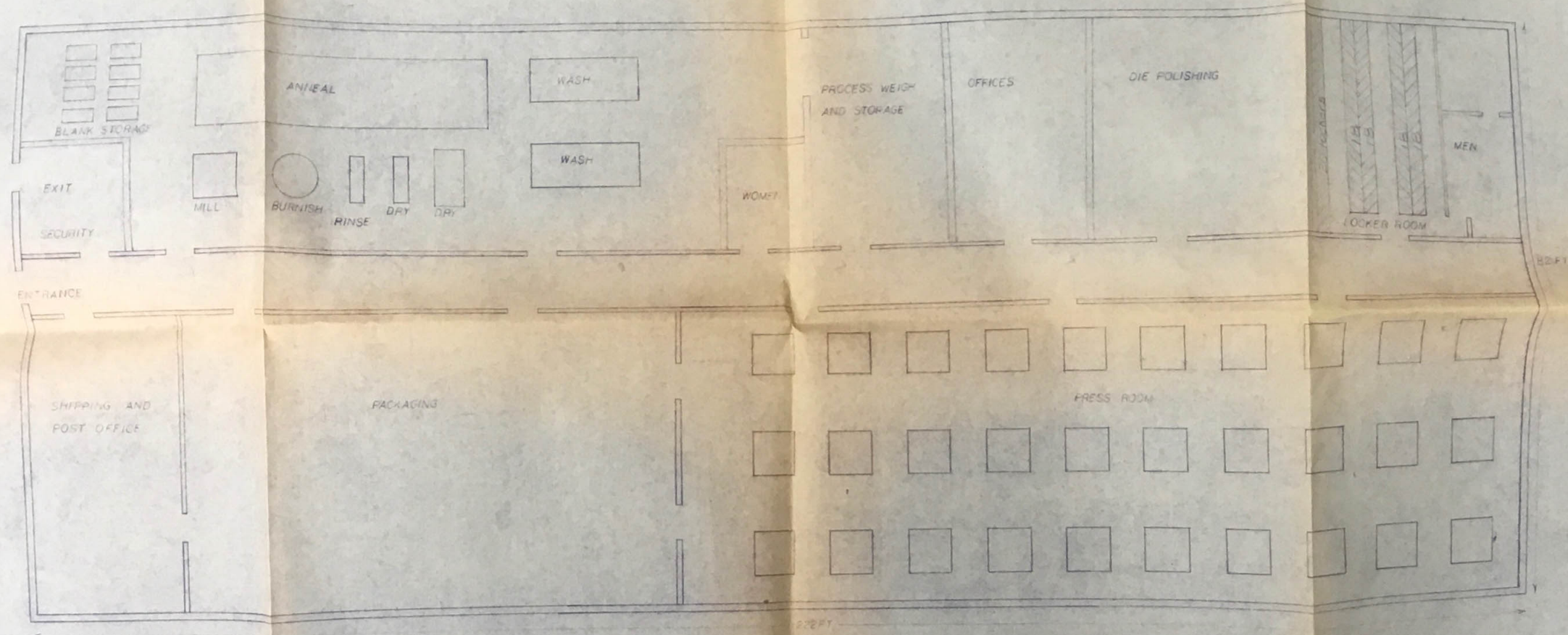
98. [Signature]

99. [Signature]

100. [Signature]



PRELIMINARY SPACE SURVEY		REV. B
ADMINISTRATION/MAINTENANCE BLDG.		
SCALE: 1/8" = 20'	APPROVED BY: <i>[Signature]</i>	DRAWN BY: MJD/ATG
DATE: MARCH 1972	<i>[Signature]</i>	REVISED: JUNE 1972
U.S. DENVER MINT		
NEW MINT CRITERION PLATE No. 3		PAGE 2 OF 2

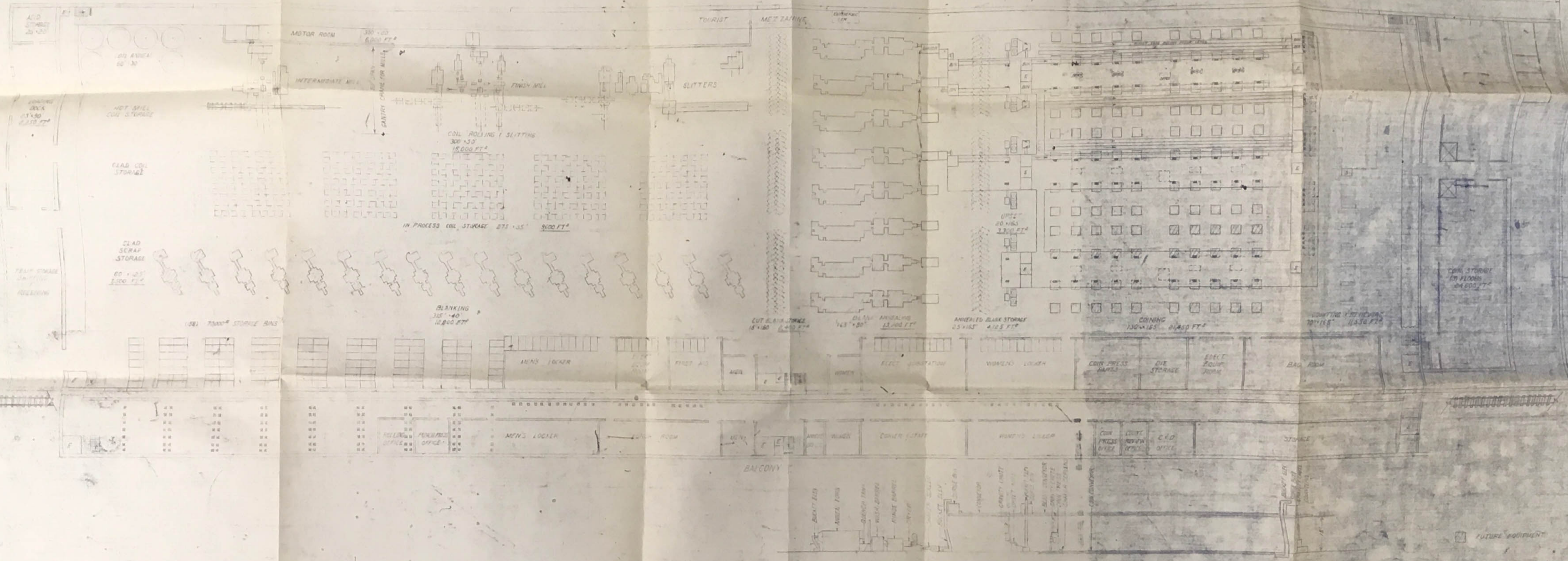


PRELIMINARY SPACE SURVEY

PCOF COIN FACILITY		APPROVED BY <i>[Signature]</i>	DRAWN BY MAJOR
SCALE: 1" = 20'	DATE: 7/10/72	REVIEWED	
U.S. DENVER MINT		DRAWING NUMBER	
NEW MINT FLATE NO. 4		PAGE 1 OF 1	

Series of Blue Print Copies of New Mount Faculty Clearing

the Plan map for New Mount at the Platte River location 1972



FUTURE EQUIPMENT

PRELIMINARY SPACE SURVEY

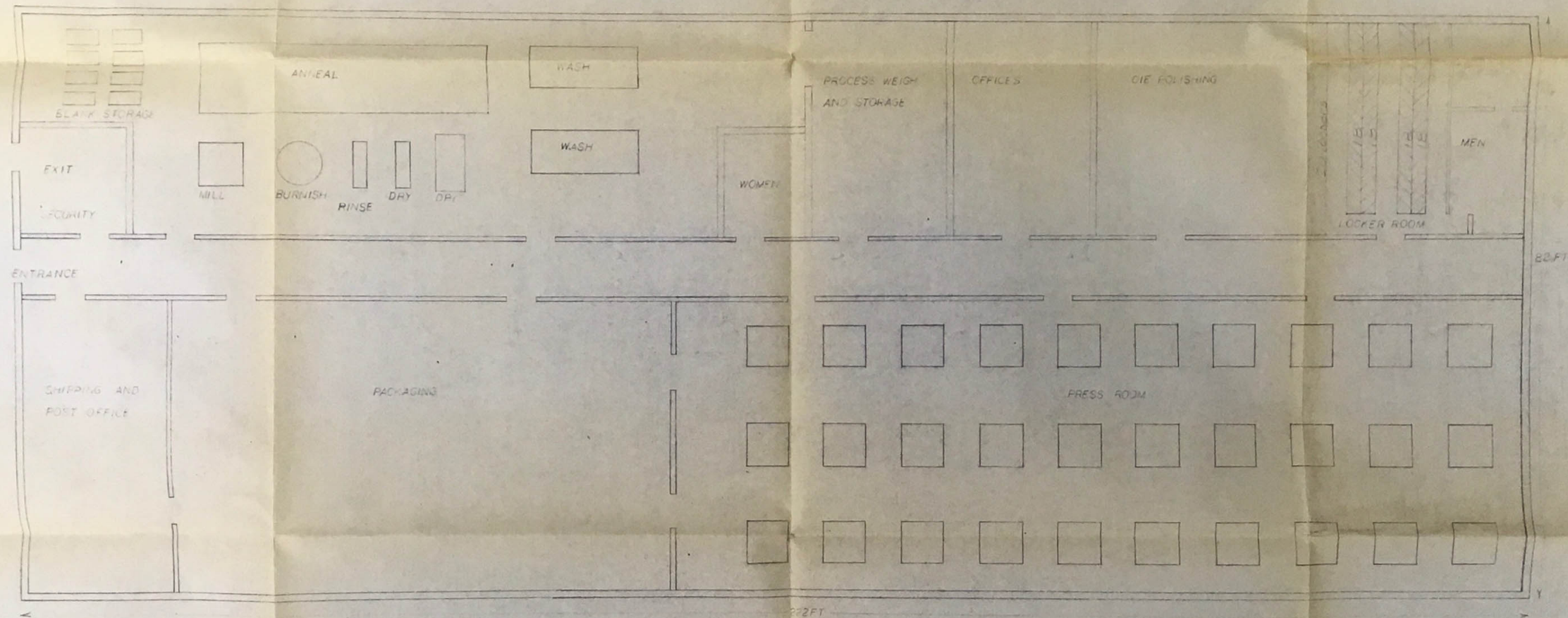
COINING FACILITY

DATE: 1-1-60

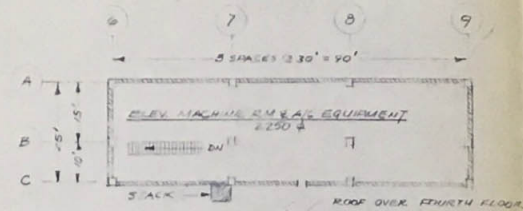
BY: [Signature]

U.S. MINT

U.S. MINT CRITERION PLATEND 2 PAGE 1 OF 1

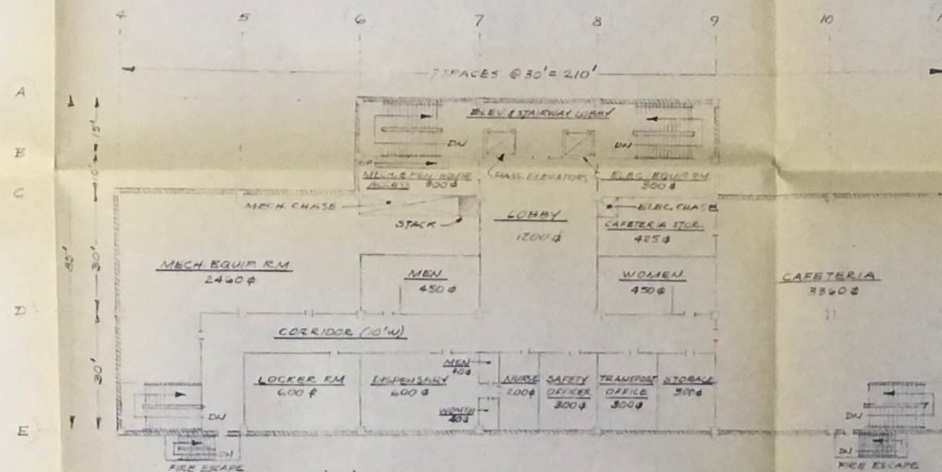


PROOF COIN FACILITY			
SCALE: 1/4" = 1'-0"	APPROVED: <i>[Signature]</i>	DRAWN BY: MAJOR	
DATE: 7/10/72	REVISION:		
U.S. DENVER MINT			
NEW MINT PLATE NO. 4			
DRAWING NUMBER		PAGE 1 OF 1	



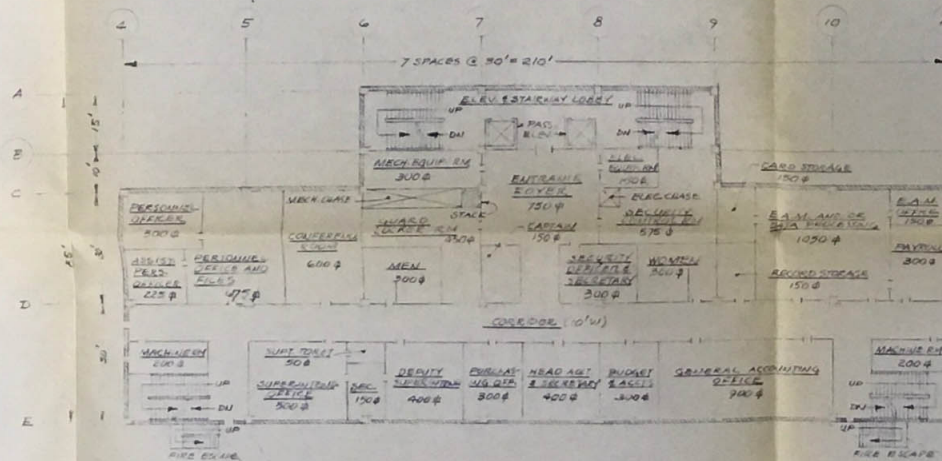
PENTHOUSE PLAN

SCALE: 1"=20'



FOURTH FLOOR PLAN

SCALE: 1"=20'



THIRD FLOOR PLAN

SCALE: 1"=20'

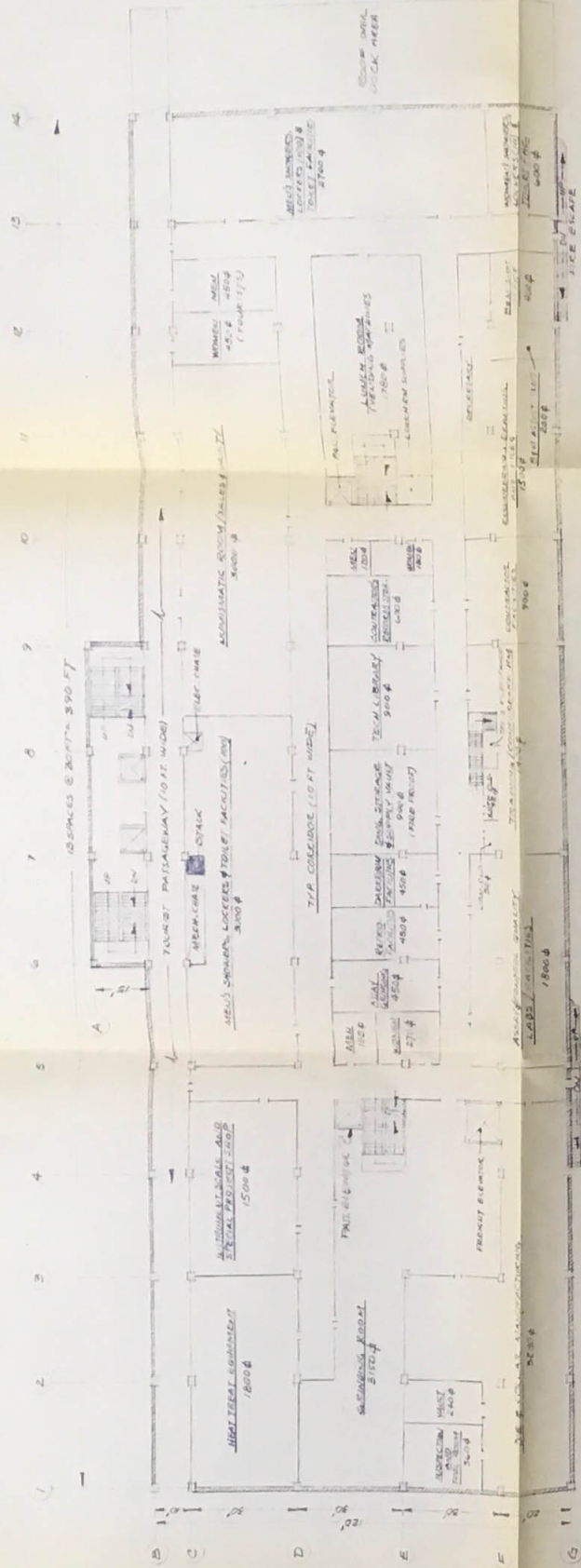
PRELIMINARY SPACE SURVEY

ADMINISTRATION/MAINTENANCE BLDG.

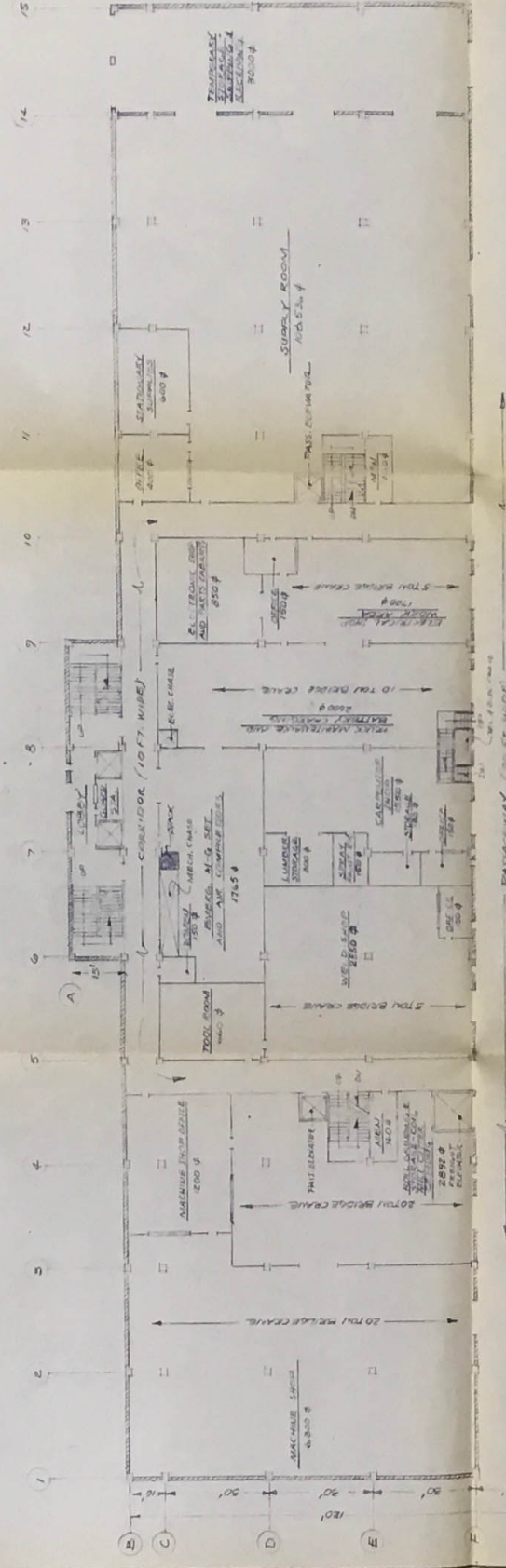
SCALE: 1/4"=20' FT. APPROVED BY: [Signature] DATE: MARCH 1972. DRAWN BY: UNITS 12. REVISED: JUNE 1972.

U.S. DENVER MINT

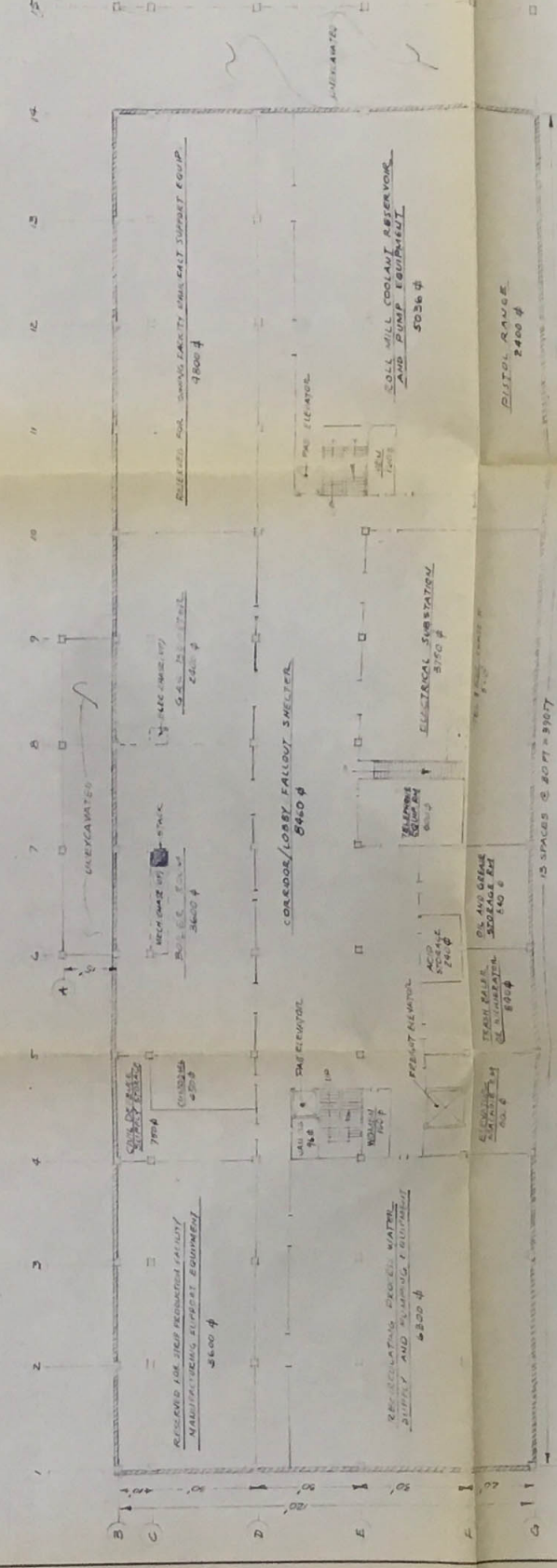
NEW MINT CRITERION PLATE 103. DRAWING NUMBER: PAGE 2 OF 2



SECOND FLOOR PLAN
SCALE: 1/4" = 20'-0"

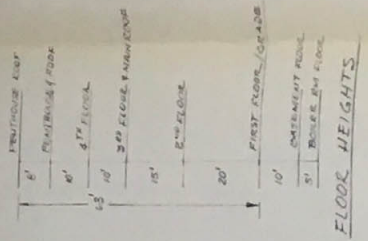


FIRST FLOOR PLAN
SCALE: 1/4" = 20'-0"



BASEMENT PLAN
SCALE: 1/4" = 20'-0"

FLOOR	AREA (SQ. FT.)
BASEMENT	96,900
FIRST	21,250
SECOND	98,150
THIRD	9,850
FOURTH	11,850
FIFTH	11,850
TOTAL	170,800



FLOOR HEIGHTS

PRELIMINARY SPACE SURVEY

ADMINISTRATION/MAINTENANCE BLDG.

SCALE: 1/4" = 20'-0"

DATE: MARCH 1972

APPROVED BY: [Signature]

DESIGNED BY: [Signature]

U.S. DENVER MINT

NEW MINT CRITERION PLATE NO. 3

REVISIONS:

1. [Description]

2. [Description]

3. [Description]

4. [Description]

5. [Description]

6. [Description]

7. [Description]

8. [Description]

9. [Description]

10. [Description]

11. [Description]

12. [Description]

13. [Description]

14. [Description]

15. [Description]

16. [Description]

17. [Description]

18. [Description]

19. [Description]

20. [Description]

21. [Description]

22. [Description]

23. [Description]

24. [Description]

25. [Description]

26. [Description]

27. [Description]

28. [Description]

29. [Description]

30. [Description]

31. [Description]

32. [Description]

33. [Description]

34. [Description]

35. [Description]

36. [Description]

37. [Description]

38. [Description]

39. [Description]

40. [Description]

41. [Description]

42. [Description]

43. [Description]

44. [Description]

45. [Description]

46. [Description]

47. [Description]

48. [Description]

49. [Description]

50. [Description]

51. [Description]

52. [Description]

53. [Description]

54. [Description]

55. [Description]

56. [Description]

57. [Description]

58. [Description]

59. [Description]

60. [Description]

61. [Description]

62. [Description]

63. [Description]

64. [Description]

65. [Description]

66. [Description]

67. [Description]

68. [Description]

69. [Description]

70. [Description]

71. [Description]

72. [Description]

73. [Description]

74. [Description]

75. [Description]

76. [Description]

77. [Description]

78. [Description]

79. [Description]

80. [Description]

81. [Description]

82. [Description]

83. [Description]

84. [Description]

85. [Description]

86. [Description]

87. [Description]

88. [Description]

89. [Description]

90. [Description]

91. [Description]

92. [Description]

93. [Description]

94. [Description]

95. [Description]

96. [Description]

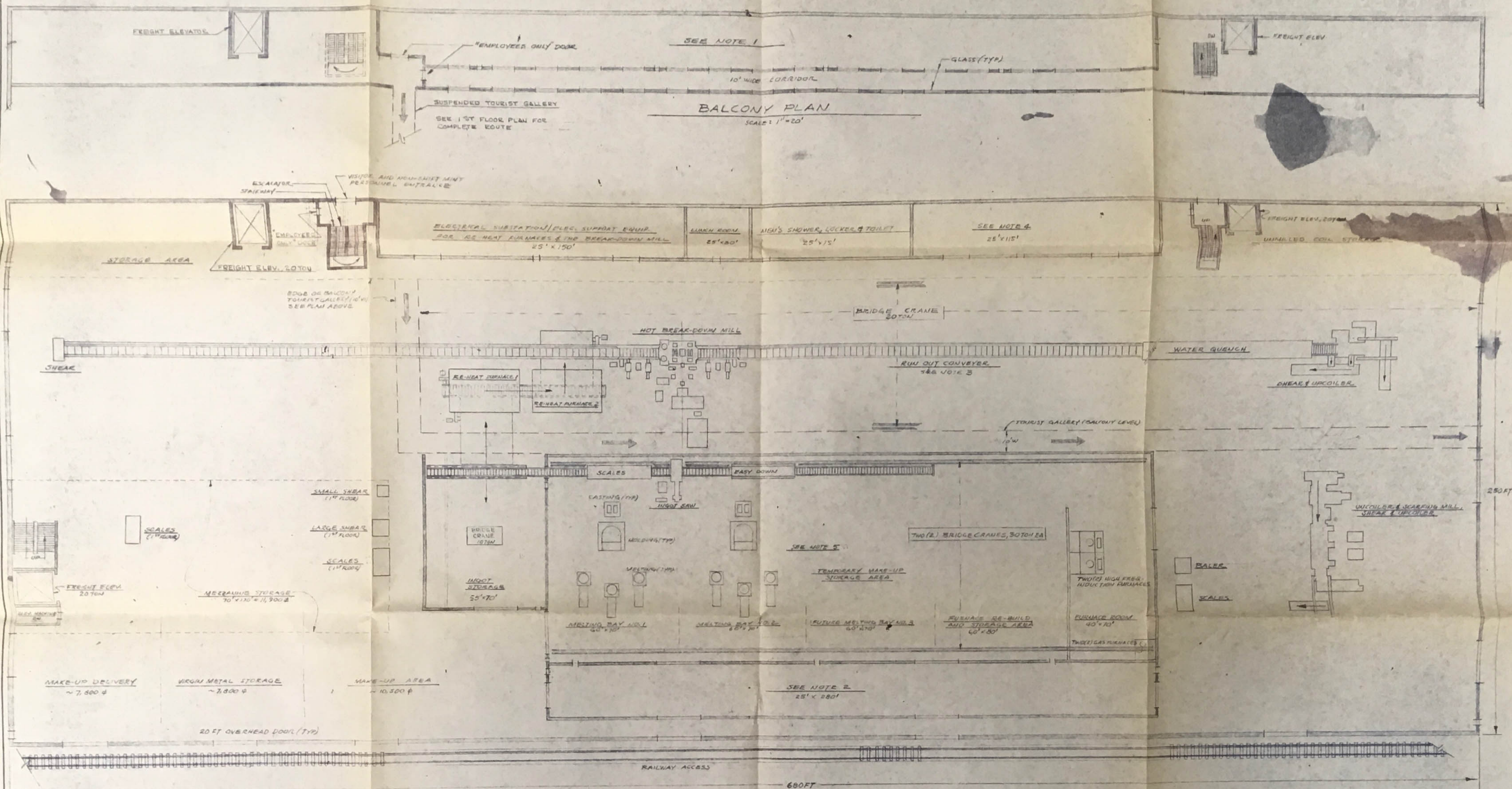
97. [Description]

98. [Description]

99. [Description]

100. [Description]

SEE PAGE TWO OF THIS SET FOR THE PLANS OF THE FIRST, SECOND, AND THIRD FLOORS.



NOTES

1. THE BALCONY LEVEL WILL CONTAIN THE FOLLOWING:
 - a. MELTING SUPERINTENDENT'S OFFICE, APPROX. 500 SQ. FT.
 - b. MELTING SUPERINTENDENT'S OFFICE STAFF, APPROX. 1000 SQ. FT.
 - c. CONFERENCE ROOM, APPROX. 500 SQ. FT.
 - d. MEN'S & WOMEN'S TOILET FACILITIES
 - e. CUSTODIAN STORAGE AREA
 - f. GROUND AND STORAGE
2. THIS SPACE WILL CONTAIN THE FOLLOWING:
 - a. ELECTRICAL & EQUIPMENT (TRANSFORMERS, ETC.) FOR INDUCTION FURNACES, HIGH FREQUENCY GENERATORS AND TRANSFORMERS, ETC. FOR OTHER MANUFACTURING MACHINERY & FOR BUILDING PAIR & LIGHTING, AND MELT ANALYSIS LABORATORY
 - b. MEN'S TOILET
 - c. CORPSE'S OFFICES
3. RUN OUT CONVEYER LENGTH BASED ON THE FOLLOWING:
 - a. IN-GUT DIMENSIONS ARE 5" HIGHER THAN 38" HIGHER WIDE AND 23" AT LONG
 - b. ELONGATION RATIO IS APPROX. 80/10-4 WIDE, REQUIRING 187.5 FT FOR FINAL RUN
4. FUTURE SHOP AND STORAGE. ELECTRICAL EQUIPMENT, IF SPACE COVERED BY NOTE C IS NOT ADEQUATE
5. AIR CLEANING EQUIPMENT FOR MELTING AREA WILL BE LOCATED HIGH OVER THE AREA
6. AIR FIRST FLOOR AREA IS 250' X 480' = 120,000 SQ. FT.
7. TOTAL BALCONY AREA (INCL. CORRIDOR) IS 23,800 SQ. FT.

Enclosure II

PRELIMINARY SPACE SURVEY

STRIP PRODUCTION FACILITY

SCALE: 1"=20'	APPROVED: <i>[Signature]</i>	DRAWN BY: <i>[Signature]</i>
DATE: 10/10/72	REVIEWED: 10/10/72	
U.S. DENVER MINT		
NEW MINT CRITERION PLATE NO. 1		DRAWING NUMBER: Page 1 of 1

the Plan map for New mint at the Platte River location 1972

Map 1974 Environmental Report Statement for New West Securities



PRELIMINARY SPACE SURVEY

PLATTE RIVER SITE PLAN

SCALE: 1" = 100' FT	DESIGNED BY: [Signature]	DATE: 10/1/54
DATE: MARCH 1954	DESIGNED BY: [Signature]	DATE: 10/1/54
U.S. DENVER MINT		
DENVER MINT CRITERION/ PLATE NO. 4		

PG. 1 OF 1

Maps 1974 Environmental Report Statement for New Hunt Sections

Report . Minutes of Building & Mechanical Cross Section Meeting

RECEIVED

JAN 27 1975

January 20, 1975

Frank H. MacDonald

OFFICE OF
SUPERINTENDENT
U. S. MINT AT DENVER

George G. Ambrose

Initialed

Transmittal of Minutes and Summary of the Building and Mechanical Cross-Visitation Meeting of November 11-15, 1974.

Attached are the minutes of the recent Building and Mechanical cross-visitation meeting held at the Denver Mint.

We believe that the meeting largely was successful, that the objectives originally set out by the program plan were satisfactorily met, and that the participants definitely profited from the meeting. Naturally, this being a first, there were several areas which should be altered or improved upon in future meetings of this type. First, the length of the visit was excessive by at least one day. Future meetings of this sort probably should be held to three days with a fourth day optional.

Second, a variation in meeting format is suggested, with half of each day devoted to conference sessions and the other half to field trips within the plant. Such an arrangement would break up all-day conference sessions and give a desirable change of pace to each day's meeting.

Third, although we had exclusive presentation by Mr. Duane Sjaardema on the Denver Mint's management and operating system for the Building and Mechanical Division, as programmed by this office, senior personnel from the field offices indicated their interest in presenting their division's mode of management and comparing same with Denver and other facilities. In fact, several of them had made some preparation to do so. Consideration of this approach will be given to future meetings.

Mr. Sjaardema did an outstanding job in presenting the Denver Mint's Building and Mechanical Division's operations. He mentioned that he was afforded a great deal of freedom in his presentation (in the content, format, and the participation) and hopes that this freedom will remain for future meetings. I feel that this aspect of these meetings is highly important to the success of cross-visitations. It means that the responsible individuals at the field offices are given maximum latitude in the presentation of information. The purpose of these meetings is fundamentally to benefit the field offices; therefore, their modes of presentation should largely be their own, not dictated by the Bureau.

A questionnaire was prepared by the Office for Production and forwarded to each senior officer of the group from each field office attending. Responses were made and generally were very favorable toward the meeting and its results. Criticisms, when made, were highly constructive and were uniformly aimed toward the improvement of future meetings. Commentary, both during the meeting and via the questionnaire responses, revealed common problems to the management of the Building and Mechanical functions. The problem of spare parts inventory management and procurement is in the forefront. The lack of comprehensive planning and control of maintenance operations and the vital need for a job order system to permit accomplishment of maintenance work on a planned and scheduled basis, rather than as equipment breaks down, was acknowledged.

Recommendations relative to the meeting, other than mentioned previously, were made. Typical of these was the suggestion that an outside speaker, expert in the field, be solicited to present his point of view to our key maintenance management. The idea of presenting general and theoretical maintenance management techniques was advanced.

A point of interest, which was iterated by every principal from each of the field offices, was that solutions to the problems of each of the Building and Mechanical Divisions were not precisely the same, field office by field office. This office concurs in that viewpoint, and believes that whereas a standard approach to analyzing these problems must be taken, a tailored approach to solving them must be adopted.

It is the intent of the Office for Production that future meetings of this type be held at the Philadelphia Mint and the San Francisco Assay Office, once the freeze on travel is lifted. At this time, we consider it advisable to include only the same level of management as attended the Denver meeting.

Attachment

cc: G.G. Ambrose
A.J. Goldman
A. Bresnick
C.B. Pierce
Supt., U.S. Mint, Phila.
Supt., U.S. Mint, Denver ✓
O.I.C., NYAO

O.I.C., SEAO
O.I.C., West Point
A.J. Leone
D.R. Sjaardema
R.W. Voss
N.N. Weiss
S.F. Packwood

MINUTES

BUILDING & MECHANICAL
CROSS-VISITATION MEETING

NOVEMBER 11-15, 1974

UNITED STATES MINT
DENVER, COLORADO

ATES MINT
COLORADO

ATTENDEES

BUREAU

G. Ambrose	Assistant Director for Production
S. Packwood	Chief, Production Resources Division
R. Weirich	Chief, Planning and Evaluation Division
W. Smith	Industrial Engineer - Office for Technology
I. Bielli	Secretary

DENVER

D. Sjaardema	Supt., Building & Mechanical Division
L. Heinz	Asst. Supt., Building & Mechanical Division
A. Vaitaitis	Electrical Engineer
F. Rhea	Facilities Program Manager
L. Wittner	Quality Assurance Specialist
H. Frost	Assayer
W. Darlington	Superintendent, Coining Division
R. Lord	Mechanical Engineer
P. Kiley	Computer Systems Analyst - Accounting Division
A. Garner	Asst. Foreman - Electric Shop
F. Zordell	Foreman - Electric Shop

PHILADELPHIA

A. Leone	Supt., Building & Mechanical Division
F. Sanchez	Foreman, Machine Shop
E. DeWees	Foreman, Electric Shop

SFAO

R. Voss	Program Manager, Office for Production
J. Waldron	Foreman, Machine Shop
C. Ede	Foreman, Machine Shop
E. Mahoney	Asst. Foreman, Electric Shop
N. Lambo	Head, Building Maintenance Branch
D. Leonardos	Engineer

NYAO

N. Weiss	Head, Building & Mechanical Division
W. Duff	Asst. Head, Building & Mechanical Division

WEST POINT

F. Brown	Head, Building & Mechanical
G. Wadsworth	Asst. Head, Building & Mechanical

MONDAY - NOVEMBER 11, 1974

Morning Session

Mr. Samuel Packwood opened the meeting at 8:00 by introducing Bureau personnel and field offices Division Superintendents who introduced members of their delegations. Mr. Packwood introduced Mr. Duane Sjaardema as host and turned the meeting over to him for a brief rundown of general information items.

Mr. Ambrose introduced all attendees to Mrs. Higby.

Mr. Packwood outlined the underlying purposes of the meeting:

1. Establish a prototype for future B&M cross-visitation meetings at other Mint facilities, both at this level and possibly lower levels.
2. Become conversant with Denver Mint's B&M operations.
3. Accomplish those objectives set out in the cross-visitation program plan and determine their effectiveness for use in future cross-visitation programs at other facilities.

Mr. Packwood noted that the special purpose of this meeting is to begin preliminary discussion relative to blanking die-set standardization. Having background on the subject, Mr. Leone will act as moderator for this session (scheduled for Wednesday, 8:00 a.m.).

Mr. Packwood reintroduced Mr. Robert Weirich and turned the meeting over to him for a presentation relating to a proposed Mint-wide Maintenance Program Study.

Mr. Weirich presented a discussion of a proposed Maintenance System Effort (copies distributed to all attendees). This concept evolved from a series of discussions between A. Bresnick (Bureau), S. Rosenbaum (Phila.), and Mr. Weirich, relating to ways of achieving some improved maintenance systems in the Mint operations.

In addition to the presentation, Mr. Weirich provided the following background material (also distributed to attendees):

IMPROVEMENT OF PHILADELPHIA MINT PREVENTIVE MAINTENANCE SYSTEM*
dated 10/31/74

A MAINTENANCE PROGRAM STUDY
dated 11/17/74

*Note correction. The current PM system was developed in 1966-1969 by Mr. Leone rather than having been obtained with equipment for the new Philadelphia Mint.

Following his presentation, Mr. Weirich held a discussion period which focused mainly on problems related to Cost Control. Significant points of the meeting:

A. Vaitaitis: In relation to job orders, the DIPS system does not allow for sufficient categorizing of the labor expended to work orders and, therefore, does not give adequate breakdown of the charges.

R. Voss: There should be a means of identification of job orders specifying how they should be charged. Categories are: Administration Overhead, Production Overhead, or General Overhead.

The general feeling is that the present DIPS system will be inadequate for needs in abovementioned areas.

In response, Mr. Weirich agreed that there is a definite need for the types of capabilities in the system that were being requested. He advised the group that the Cost Accounting system numbering will be revised as part of the development of a new Financial Management Information System. These changes will be incorporated in the DIPS system in an appropriate manner. Changes should take about another year to be completed. Until such time as the necessary revisions are made, Mr. Weirich suggested that the possibility of setting-up an interim system should be explored.

The DIPS system should be implemented in all facilities by early April. The pace of development of the FMIS and incorporation of a new Cost Accounting system will be governed by availability of staff to conduct the effort.

Mr. Weirich welcomes any comments, suggestions, or criticisms that might help improve the DIPS system or that should be considered in developing a new Cost Accounting system. These should be directed through channels to Mr. Ray Kukol (Bureau).

Two groups were formed for a general tour of the B&M plant. Tour was conducted by A. Vaitaitis and L. Heinz (as per attached tour agenda).

Tours were instructed to break up at 11:30 a.m. for lunch and report back at 1:00 p.m.

AFTERNOON SESSION

Group 2 instructed to complete their tour. Group 1, having gone through the entire tour, proceeded to areas of individual interest.

Groups instructed to reconvene at 8:00 a.m. Tuesday.

Meeting adjourned.

Tour Guides:

A. Vaitaitis

L. Heinz

Tour Members:

E. DeWees (P)

A. Leone (P)

J. Waldron (SFAO)

F. Sanchez (P)

G. Wadsworth (WP)

R. Voss (SFAO)

W. Duff (NYAO)

N. Weiss (NYAO)

C. Ede (SFAO)

F. Brown (WP)

N. DeLambo (SFAO)

E. Mahoney (SFAO)

R. Weirich (BUREAU)

G. Ambrose (BUREAU)

S. Packwood (BUREAU)

W. Smith (BUREAU)

I. Bielli (BUREAU)

TOUR ROUTE

Area 1 - New Personnel Office. Remodeling of old Scale Shop to provide new office facilities for Personnel Division. All in-house construction. Upper floor level being added for classroom space.

Area 2 - Refinery Press Room. Conventional presses being used because of floor loading limitations. Packaging machine in northeast corner is for packaging Presidential and Mint medals.

Area 3 - Heat Treating Area. Facilities for heat treating high speed steels with atmospheric control (Exothermic generator used), and various tool steels. Includes one salt bath unit. Burnishing unit on west side used for medals.

Area 4 - Scale Shop. New facility converted from old Special Melt Room. Second floor office level added. Construction and equipment installation, including bridge crane, by in-house labor. Scale Shop functions - scale and balance maintenance and repair, vault door and lock maintenance and repair, coin counter maintenance and repair, bag closure sewing machine maintenance and repair, instrument and gage calibration and repair, experimental and development projects, small parts machining.

Area 5 - Machine Shop. Function; machining tasks, millwright activity. Note Cincinnati mill and fixture for milling die holders.

Area 6 - Grinding Room. Part of Machine Shop function. Elevator recently installed by in-house labor for transfer of die sets between Machine Shop level and Grind Shop level.

Area 7 - Melting Area. Note book molds, induction melting furnaces, controls, etc. High frequency 960 cycle generators are in basement.

Area 8 - Annealing Area. The ventilation system on these units has caught fire several times which is visually evident.

Area 9 - Rolling Mills. These 18" mills date back to 1945. The Matthews conveyor system was added later and replaces the conveyor originally supplied for the unit. The conveyor and paddle wheel transfer system have been a constant source of irritation and

problems. The finish mill has an Xray gage for thickness control.

Area 10 - Punch Presses. The three McKay-Warco presses were mounted on stilts, extending to ground level, supposedly because the floor was inadequate to support the static and dynamic loading. GSA designed and installed these in 1970-71 but no one takes credit for them. In addition to the five presses, there are two 45-ton Bliss presses in the basement, south end. On the west side of the room is the "slab annealer" which is not being used at present and may be removed in the near future to provide space for coining presses.

Area 11 - Main Press Room and "Tramway" Press Room. Observe the 1.210 conversions, the feedtracks on the Feedmatic units, some attempts at OSHA compliance such as the rear gate, and machine guarding or the lack of it.

Area 12 - Count & Review Section. New tables to support the counting machines recently installed here.

Area 13 - Vault Door. New opening cut into vault to provide truck access. This vault was used to store gold until recently and consisted of cubicles constructed of heavy boiler plate. Approximately 32 tons of steel, riveted in place, was removed in June.

Area 14 - Special Melt and Souvenir Coin Packaging Area. Special melt area has dual use as furnace rebuilding area for melt room.

Area 15 - Carpenter Shop and Lumber Storage Area. This group does the carpenter work, furnace rebuilding and relining, all concrete work and masonry, concrete drilling and sawing, and heavy equipment moving and installation.

Area 16 - Boiler Room. Included in this area are the air compressors, the latest of which is a rotary screw type. The boiler feedwater supply is from our own deep well and requires no treatment to prevent scale formation.

Area 17 - Storeroom and Receiving Dock.

Area 18 - Roll Grinding Facility.

Area 19 - Oil Recovery Room.

Area 20 - Make-Up Area. Part of the Ingot Melt Division. Melt make-up is transferred from here to the second floor.

Area 21 - Generator Room. High frequency generators for operation of the induction melting furnaces.

Area 22 - Coin Shipping Area. Coin transferred from here to trucks for shipment.

- Area 23 - Battery Charging Area. Denver Mint has approximately 46 trucks, 2 of which are gasoline engine driven, the remainder battery driven.
- Area 24 - Lunchroom. For employee use. WG employees are not allowed off the premise during the workday so they either carry their lunch or purchase it from the vending machines.
- Area 25 - Electric Shop. Primary functions are electrical work, truck maintenance, elevator maintenance, pump maintenance, maintenance of gas controls, power transmission equipment maintenance, air conditioner maintenance, fan and ventilation equipment maintenance, crane and hoist maintenance and preventive maintenance.
- Area 26 - Weld Shop. The functions of this group are all welding, sheet metal work, pipefitting and plumbing.
- Area 27 - Cottrell Unit. Used for removing dust particles from the ventilation air, primarily from the melting activities.
- Area 28 - Sheet Metal Shop. Part of the Weld Shop function.
- Area 29 - Custodial Section. Functions are all custodial activity and lawn and grounds maintenance, including snow removal from sidewalks, steps and parking areas. The Incinerator is used to burn all burnable trash from offices and coin or blank production areas.

TUESDAY - NOVEMBER 12, 1974

8:00 a.m. - Mr. Packwood opened the meeting by inviting comments and/or observations related to Monday's tours. Participants briefly discussed points of individual interest.

Mr. Packwood introduced Frank Rhea to present the following rundown on the status of the new Denver Mint.

In 1972 detailed design criteria and generalized layouts were completed for the new Denver Mint. From this planning, it was determined that the new Mint would have a gross area of approximately 700,000 square feet and it was confirmed that a site of about 30 acres was required.

With this work completed, a site along the South Platte River in Denver was tentatively selected. After completion, publication, and review of the necessary Environmental Impact Studies, this site was formally selected for the new Mint. In the meantime, an architect-engineer firm was selected for design services. All of these activities were accomplished in conjunction with the General Services Administration, as the basic law authorizing Mint facilities requires the Secretary of the Treasury to work through GSA in acquiring sites and constructing new facilities.

In the Fall of 1973, in the middle of negotiations for design services with the selected A-E firm, we became aware of plans by the Burlington Northern Railway Company to relocate the main North-South railroad trackage through Denver to the west bank of the South Platte River, immediately adjacent to the long, narrow Mint site. The Bureau of the Mint determined that this railroad relocation would make the South Platte site unsuitable for the new Mint, primarily because of aesthetics.

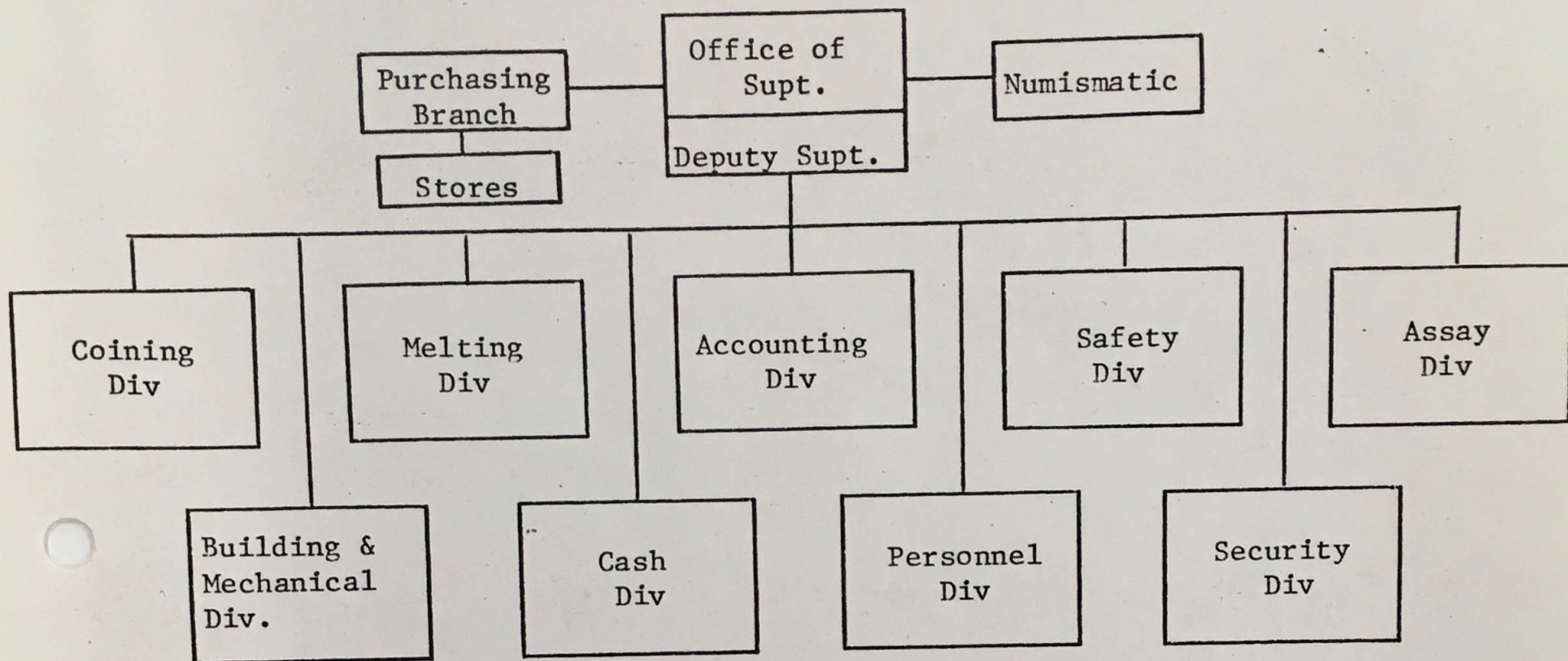
Negotiations with the A-E were suspended and a search for a new site commenced. The Mint selected two alternative sites, processed the Environmental Studies for both sites simultaneously, and in July 1974, selected a site on the northwest corner of the Park Hill Golf Course in Denver. This site is excellent from all engineering aspects, including the fact that there is plenty of space for future expansion.

Also, in late 1973, the Mint decided that the strip production portion of the new Mint would be deferred because of the uncertainty regarding the future composition of the 1¢ piece. An aluminum penny would require radically different melting, casting, and rolling equipment as compared to the copper penny, hence the deferral decision.

Since July, negotiations with the A-E have been completed in all respects and we are ready to proceed with design. However, we have another delaying factor in that the House of Representatives has not taken action on a Treasury proposed amendment to the basic Mint facilities authorization legislation. This involves an increase of \$50 million in the funds authorized for appropriations, and an extension of the time for these appropriations until the end of FY 1983. Presently, we have sufficient funds to proceed about half-way through design, with no funds available for procurement of long lead time production equipment and for initiation of building construction. Without action on the authorization for appropriations, it would not be prudent to start design as we would have to suspend design later on and let the project sit in limbo. This could involve wasted design effort due to changes in criteria brought on by another year of history in coinage demand and results of the on-going Bureau-wide study regarding coinage denominations, dimensions, weights, and alloys. It appears that there is about a 50% chance of completion of actions on the required legislation during the Congressional session scheduled to begin on November 18, 1974. Without this action, the project will be dormant for at least one year.

Mr. Packwood introduced Duane Sjaardema for his presentation on the overall operations of the Denver Building & Mechanical Division. (See following pages for Mr. Sjaardema's outline).

GENERAL MINT (DENVER) ORGANIZATION



358 Wage Board Employees
 104 G.S. Employees
462 Total

1. Straight Line Organization
2. Organized by Function
3. Eleven (11) Functions Report to One Management
4. Maintenance, A Service Function, Shares Equal Status
5. B&M Affects the Productivity and Effectiveness of Every Other Organizational Element.
 - a. The needs of each varies
 - b. The quantity of services required varies

BUILDING & MECHANICAL DIVISION
(combined craft-oriented
multi-skilled organization)

ENGINEERING

- 1 - Mechanical
- 1 - Electrical

OFFICE

- Superintendent
- Assistant Superintendent
- Clerk - Steno
- Time Clerk

SCALE SHOP

- 2 Scale Builders WG-13
- 1 Scale Builder WG-11
- Scale and Balance Maintenance
- Coin Counter Maintenance
- Bag Sewing Machine Maintenance
- Gage and Instrument Repair
- Experimentation and Development

MACHINE SHOP

- 1 Foreman WS-13
- 1 Asst. Foreman WS-12
- 3 Shift Foremen WS-11
- 6 Toolmakers WG-13
- 20 Machinists WG-11
- 1 Machinist WG-08
- 1 Vacancy WG-11

Machining Tasks
Millwright, etc.
All equipment mechanical
adjustment and repair

ELECTRICAL SHOP

- 1 Foreman WS-11
- 1 Asst. Foreman WS-09
- *7 Elec. Equip. Repairmen WG-11
- 1 Electrician WG-10
- 2 Electricians WG-08
- 2 Vacancy WG-10 (filled)

Electrical Work
Gas Controls
Truck Maintenance
Crane & Hoist Maintenance
Elevator Maintenance
Pump Maintenance
Power Transmission Equipment Maintenance
Preventive Maintenance
Air Conditioning Maintenance

*Upgrade 3 positions to WG-12

METAL WORKING BRANCH

- 1 Foreman WS-10
- 6 General Mechanics WG-11
- 2 General Mechanics WG-08

Welding
Sheet Metal
Plumbing
Pipefitting

BUILDING MAINTENANCE BRANCH

- 1 Foreman WS-09
- 1 Asst. Foreman WS-07
- 5 Maintenance Men WG-10

Carpentry
Masonry
Painting
Concrete Work
Concrete Core Drilling
Concrete Sawing
Furnace Rebuilding
Cabinet Work
Pattern Making

CUSTODIAL

- 1 Foreman WS-02
 - 1 Asst. Foreman WS-01
 - 3 Laborers WG-03
 - 8 Janitors WG-02
 - 1 Elevator Operator WG-01
- Custodial Duties
Lawn and Grounds Maintenance
Trash Disposal
Elevator Operation

BOILER PLANT

- 1 Foreman WS-09
- 5 Boiler Plant Operators WG-10

Heating
Process Steam
Air Compressors
Air ryers

6 GS Employees
85 WB Employees
91 Total
1 Vacancy

[1] ORGANIZATION - (Central Shops Arrangement)

vs.

(Area Organization [Foremen responsible for area maintenance]

or

Combination Area/Central Organization [Base crews assigned to areas]-

Central Shops provide - labor pools

" " " - support

" " " - shop work)

ADVANTAGES:

1. Flexibility
2. Multi-skill craftsman development
3. Greater manpower utilization

DISADVANTAGES:

1. Less direct communication & coordination with production
2. Less direct observation of equipment operation and malfunctions
3. Less efficient utilization of skills
4. Slower response to equipment failure (or prevention of failure)

SPECIFIC WEAKNESSES OF DENVER B&M MANAGEMENT ORGANIZATION

1. Lack of supervision on night shifts
2. Lack of inter-branch coordination on night shifts
3. Lack of project control
4. Lack of "low skilled" labor pool
5. Lack of "trainee" pool

LABOR RELATIONS:FORMALMonthly Staff Meetings

*1

Supt., Deputy Supt, and Division Heads

1 representative of first line management

Monthly Union-Management Meetings

*2

Supt., Deputy Supt., Division Heads -
(B&M, Coining, Accounting, Security, and
Personnel)

4 Union representatives

1 Union visitor

1 first line management representative

Monthly Safety MeetingsDeputy Supt., Safety Officer, Division Heads -
(B&M, Coining, Personnel, Melting)

Nurse

3 Union representatives

SUPERINTENDENT TOP MANAGEMENT

B&M SUPERINTENDENT
MIDDLE MANAGEMENT

Monthly Staff Meetings

First line supervisors, Asst. Supt., and
Engineers
Personnel representative (when desired)

Monthly Safety Meetings

*3

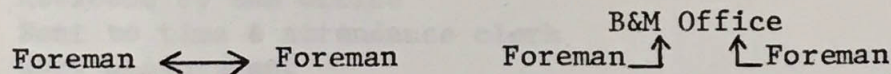
FOREMAN
1st LINE MANAGEMENT

Branch employees
Division Head or Assistant
Safety Officer (by invitation)
Engineer (by invitation)

[2] MAINTENANCE

A. Maintenance Planning & Scheduling

1. No formal procedure
2. Foremen plan and schedule workload and assignments
3. Priorities coordinated between foreman and B&M Office
4. Informal coordination between branches



5. Equipment shutdown coordinated between Production Division and B&M
 - (a) 3 coining presses any given time
 - (b) 1 blanking press any given time
 - (c) Crane inspection and maintenance on weekends
 - (d) Major repair and maintenance at Settlement
6. Settlement Activity
 - (a) Formally requested by Production
 - (b) Scheduled by B&M Office
 - (c) Scheduled by branch foreman
7. Preventive Maintenance
 - (a) Programmed by Data Processing
 - (b) Developed by Al Vaitaitis, Pat Kiley, Electrical Foreman, and others
 - (c) Presented by Al Vaitaitis*

*The details of this presentation are contained in the following document which may be obtained by contacting Mr. Vaitaitis:

United States Mint
Denver, Colorado
Preventive Maintenance Program
(Basic Concepts)

B. Shop Operation & Practices

1. Material

- (a) Each foreman responsible for material (supplies) availability and adequate spare parts
 - initiates "Request for Purchase" *4
 - approved by B&M Office
 - Procurement requisition prepared by office *5
 - copy with PR number returned to B&M Office, "copied", and sent to branch.
 - no cost data
 - no purchase information: date of purchase order, vendor, expected delivery.
 - Foreman follows up on purchases
 - Foreman inspects and approves purchased material
 - B&M Office approves store's requisition card *6
 - B&M Office approves memorandum for major item approval *7

2. Labor Distribution Cards

- (a) Prepared by employee
 - (b) Reviewed and approved by foreman
 - (c) Reviewed by B&M Office
 - (d) Sent to time & attendance clerk
 - (e) Work measurement
 - (1) Informal by foreman & B&M Office
 - (2) Lack of formal work measurement/labor standards
 - (3) Accounting and reporting procedures do not provide meaningful and reliable information for first and second line management to manage resources and operations.
 - (f) Needed:
 - Feedback cost summaries by Branch - Labor and Material
 - Feedback cost summaries by project or function
 - Feedback cost summaries by equipment number
- Equipment use report Machine Productive Operating Time
Total Machine Time Available

Downtime: Die Setting, Die Changes, etc.
B&M - emergency repairs, scheduled maintenance

Equipment Downtime Chart *8
Die Life Summary *9

3. Training

- (a) On the job
 - (1) Not formalized
 - (2) Work experience records *10

- (b) Formal education
 - (1) Employee's own time
 - (2) No recommended course content
 - (3) Approved on individual basis
 - (4) Costs paid by Government
- (c) Needed:
 - (1) Training coordinator - craft oriented
 - (2) Formalized program
 - coordinate formal education and work experience
 - monthly in-depth progress review and evaluation (include foreman and employee)
 - "wash-out" provisions

4. Shift Assignment

- (a) 3 month tours
- (b) Bid basis
- (c) Branch seniority decides
- (d) Foreman specifies numbers and grade levels
- (e) No provision for school schedules

5. Leave

- (a) Approved by foreman
- (b) Right to disapprove
- (c) Tardiness
 - (1) Approved to 15 minutes (once per quarter)
- (d) Sick leave
 - (1) Must report within 1 hour after shift starts or AWOL
 - (2) Doctor's statement required for 3 days or more
- (e) Annual leave
 - (1) Long periods (week or more) schedules arranged by April
 - (2) Seniority decides (limited numbers absent)
- (f) Restricted (light) duty or no duty
 - (1) Doctor's statement required
 - (2) Can be assigned to another Division
 - (3) Maximum 6 months
 - (4) Day shift only (normally)
 - (5) Subject to Mint Physician's review

6. Break Periods

- (a) Two 15 minute break periods
- (b) One 30 minute lunch period - includes wash-up time, time enroute - concurrent between branches (normally)
- (c) End of shift
 - (1) 15 minutes for shop clean-up, tool securing
 - (2) 15 minutes for shower time

C. Parts Fabrication, In-House or Contract Out

1. Basis for Decision
 - (a) Labor availability/workload
 - (b) Engineering/Specification availability
 - (c) Cost: in-house vs. contract
 - (d) Material requirements
 - (e) Lead time
 - (f) Production effects
 - (g) Complexity of parts/equipment
2. Procedure: Contract
 - (a) Prepare "Procurement Requisition"
 - (b) Write specifications - engineering drawings
 - (c) Prepare justification and request funds
 - (d) Issue Invitation for Bids (Procurement)
 - (e) Pre-Bid conference (Procurement and B&M)
 - (f) Open bids (Procurement and B&M)
 - (g) Review bids (B&M)
 - (h) Recommend award (B&M)
 - (i) Award bid (Procurement)

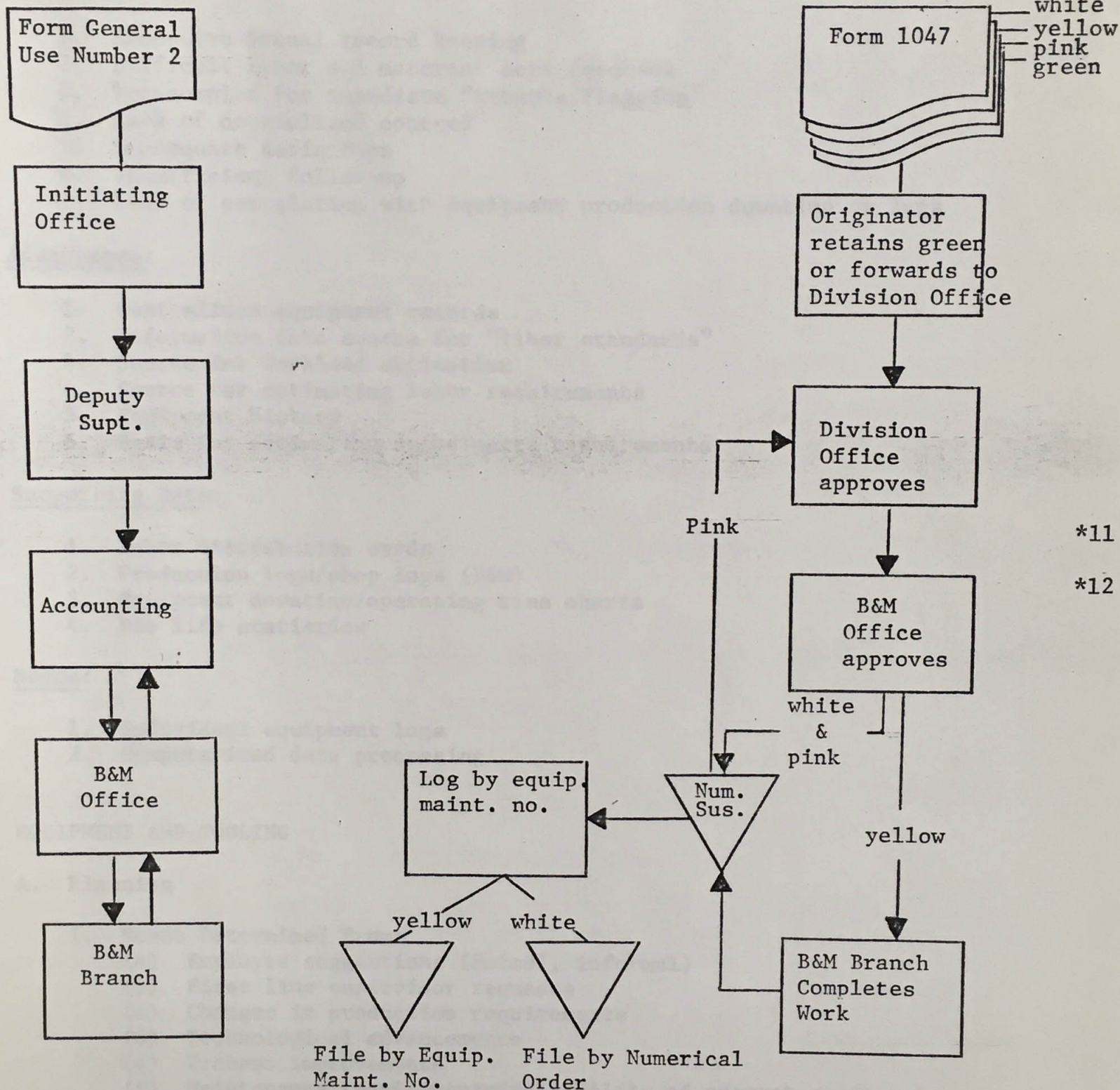
D. Equipment Spare Parts Inventory and Control

1. Two Recent Reports on this Subject
 - (a) Study made by Al Vaitaitis and Pat Kiley
 - (b) Study made by the resident Auditors
2. Discrepancies in Present System
 - (a) Main storeroom plus many satellite stores
 - (b) Stores not under one control nor identical systems
 - (c) Stores accessible to anyone
 - (d) Inadequate inventory control
 - (e) Poor stores items identification
 - (f) Poor location identification
 - (g) Items in stores which haven't been used for many years
 - (h) Items shown on stock records which were used and stock depleted
3. Corrective Action Recommended
 - (a) Improve the organizational structure of the stores/purchasing function
 - (b) Consolidate stores relative to area and control
 - (c) Identify stores items by FSN (NSN) number or by that system
 - (d) Use Government supply channels to the extent possible
 - (e) Use computer programming to the extent possible to:
 - (1) Provide usage data
 - (2) Provide inventory data
 - (3) "Flag" ordering requirements when minimum levels are reached
 - (4) Provide data on sources of procurement, brand name data, cost data, etc.

- (f) Establish maximum-minimum quantities
 - (g) Cross reference items
 - (h) Provide review procedures for retaining items infrequently used
 - (i) Maximize "quantity purchases" to take advantage of quantity discounts
 - (j) Provide better catalog descriptions of stores items
 - (k) Provide better location identification of stores items
 - (l) Provide alphabetized catalog listings of stores items to user functions
4. Basis for Spare Parts Requirements Determination
- (a) Manufacturer's recommendations
 - (b) Past experience
 - (c) Lead time
 - (d) Effect of prolonged shutdown
 - (e) Alternatives

New Job Request Number Required

Established Job Request



Work Request Procedures:

Form General Use #2 - use when a new job request number is required
 Form 1047 - use when job request is established

Work Requests Procedures

Problem Areas:

1. Excessive manual record keeping
2. Difficult labor and material cost feedback
3. Too complex for immediate "trouble flagging"
4. Lack of centralized control
5. Inadequate definition
6. Insufficient follow-up
7. Lack of correlation with equipment production downtime or lags

Advantages:

1. Centralized equipment records
2. Information data source for "labor standards"
3. Source for workload estimation
4. Source for estimating labor requirements
5. Equipment history
6. Basis for estimating spare parts requirements

Supporting Data:

1. Labor distribution cards
2. Production logs/shop logs (B&M)
3. Equipment downtime/operating time charts
4. Die life statistics

Needs:

1. Individual equipment logs
2. Computerized data processing

[3] EQUIPMENT AND TOOLING

A. Planning

1. Needs Determined from:
 - (a) Employee suggestions (formal, informal)
 - (b) First line supervisor requests
 - (c) Changes in production requirements
 - (d) Technological advancements
 - (e) Process improvements
 - (f) Maintenance requirements/reliability of present equipment

2. Limiting Factors

- (a) Budget
- (b) Space
- (c) Floor structural limits
- (d) Labor availability (skills)

B. Equipment and Tooling Replacement Practices

1. Procedures

- (a) Survey to determine what is available
- (b) Obtain vendor recommendations
- (c) Determine approximate costs
- (d) Obtain sample specifications
- (e) Prepare specifications/engineering
- (f) Procurement initiated

C. Modifications, Adaptations, Developments to Improve Operations

1. Needed

- (a) Development laboratory
- (b) Improved feed systems (change basic design)
- (c) Improved coin detection system
- (d) Consolidated OSHA compliance engineering
- (e) Consolidated noise level reduction engineering

D. Equipment Usage

(Mr. Sjaardema held an open discussion rather than explaining by outline)

E. Material Specifications for Tooling

(Open discussion)

[4] ENGINEERING

A. Plant and Facilities Layout - Proposed Plans

Due to increased production demands, it is necessary that the present Denver Mint convert from a combination strip manufacturing-coining operation to a coining operation only. Essentially, this means the shut-down of melting operations, removal of milling equipment with replacement by blanking presses, blank annealing and coining equipment, and coin presses. The rearrangements necessary under this plan are in the process of being studied by B&M Division Engineers.

B. Engineering

Current Engineering organizational and personnel interfaces are as follows:

B&M Division - 1 Supervisory Engineer as Superintendent of the
Division
1 Mechanical Engineer
1 Electrical Engineer

This Engineering group interfaces and works with the Coining Division, which has a Mechanical Engineer as Assistant Division Superintendent, and an additional Mechanical Engineer. Also, the B&M Division consults with the new Mint Project Manager/Engineer, and with other divisions, as required, to maintain and perform design work for the Denver Mint.

C. Engineering Projects

1. Improved ventilation systems
 - (a) Grinding Room
 - (b) Annealing area
2. Office remodeling and renovation
3. Coinage tooling standardization
4. Preventive Maintenance program development
5. Storeroom improvement and inventory control procedures
6. Vault renovation
7. OSHA
8. B&M organizational restructuring
9. Maintenance planning and control systems
10. Equipment useage and maintenance records

D. OSHA

NOTE

*At various points in his presentation, Mr. Sjaardema distributed data sheets, forms, etc., for additional information relating to his outline. Throughout this presentation, the numbers *1 through *12 appear (in order of distribution) on the right margin. These numbers are representative of Mr. Sjaardema's attachments, and, although they will not be included as part of the minutes of this meeting, they may be obtained by contacting either Mr. Sjaardema or the Office for Production (Bureau).

Following Mr. Sjaardema's presentation, a brief discussion period was held, focusing mainly on the following:

1. OSHA Compliance - Denver and the other field offices feel that they are at a stand still until such time as they receive direction from the Bureau as to what steps should be taken in regard to achieving standards required by OSHA.
2. Another factor hindering compliance with OSHA standards is the budget situation. Participants feel that their facilities are not allotted the funds needed in order to make the necessary modifications. Mr. Ambrose advised the group that Mr. James McGee, Chief - OSHA and EPA (Bureau), is proposing that a separate budget item be introduced strictly identified for use in complying with OSHA.

In Denver there are added complications with efforts to comply with OSHA, due to the planning of the new Mint. Since the present facility in Denver will eventually be phased out, there are problems in deciding how much should be spent on OSHA improvements.

3. Mr. Ambrose reminded the group of the limited time period remaining for the field offices to send their equipment requirements and specifications (for equipment in excess of \$10,000) for FY 1975 to the Bureau. He emphasized that their immediate attention should be given to this matter.
4. Mr. Packwood gave a brief rundown of Wednesday's schedule:

A.M. - Die Standardization Meeting - Mr. Leone's presentation
(not mandatory for all members)

For members not attending above session, free time
scheduled for informal touring and/or discussion with
counterparts.

P.M. Summary meeting of day's activities - 3:30 p.m.

Group instructed to reconvene 8:00 a.m., Wednesday.

Meeting adjourned.

WEDNESDAY - NOVEMBER 13, 1974

Morning Session

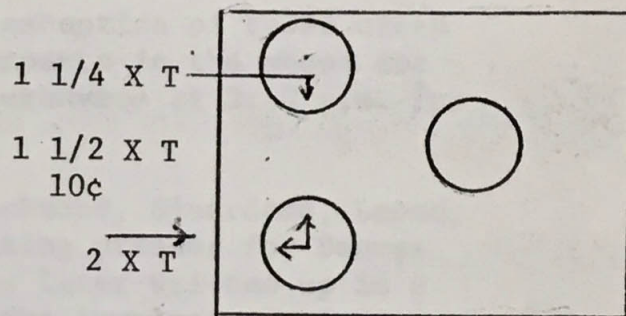
Mr. Packwood opened the meeting at 8:00 a.m. by introducing Mr. Leone to present the Die-Standardization report.

Mr. Leone illustrated, with drawings and other data sheets, how the Philadelphia Mint obtains blanking yield on various denominations:

Maximum Width Production In-House - Philadelphia

15" - 1¢, 5¢
13 1/2"- 10¢, 25¢, 50¢, and \$1

<u>Denom.</u>	<u>Width</u>	<u>Blanks</u>
1¢	15.000	21
5¢	14.500	18
10¢	13.375	20
25¢	12.812	14
50¢	12.562	11
\$1	13.062	9



NOTE: Copies of drawings and data sheets were distributed to attendees. Additional copies may be obtained by contacting Mr. Leone.

Following the presentation, participants had an informal discussion of the applicability of Philadelphia's system to their respective facilities. The following items were discussed:

1. Objective of the Die-Standardization program is to acquire interchangeability of strip and blanking dies between various coining facilities.
2. Mr. Leone's blank diameters used in blanking strip layouts will be accepted as "standard" subject to reverification by the Office for Technology (Dr. Goldman).
3. Denver should start evaluating the proposed change-over to carbide dies.
4. All facilities will be using 15" bronze strip exclusively, the purpose being that even though Denver and San Francisco will, for the most part, be operating with purchased strip, there will be times when they will need to acquire their strip from Philadelphia. Therefore, the 15" strip used in Philadelphia will be the accepted standard.

5. Mr. Leone's layout can accomodate any type material. At one point, Philadelphia experienced some problems with pick up of Aluminum dust on punches when blanking experimental material, but proper lubrication eliminated this. Mr. Leone advised that Philadelphia will also start top and bottom lubrication of their 1¢ strip material. He recommended to those doing facilities planning that blanking presses be procured with such a strip lubricating system. Mr. Heinz related problems encountered by Denver while using a press with strip lubricating system; specifically, pulling of slugs.
6. Mr. Ambrose advised that the Bureau is preparing to award a contract for a study on coinage materials (study to be done by an outside firm). This will be an extensive study and will be the basis for future planning of coinage materials.

At this time, the group members (with the exception of those cited below) were scheduled to meet with their counterparts in the shops for informal discussion. Group was instructed to reconvene at 3:30 p.m. for a summary meeting.

As a separate meeting, Messrs. Ambrose, Packwood, Sjaardema, Leone, and Leonardos discussed the procurement of blanking presses for Denver and San Francisco. Results of this meeting were later written up in a memorandum by Mr. Leonardos and distributed to the involved parties.

AFTERNOON SESSION

Group reconvened at 3:30 p.m. for a summary meeting. Following are the main points of that meeting:

1. Duane Sjaardema feels that, as a result of closer involvement with procurement functions, foremen in Philadelphia and San Francisco could be more cost conscious than those in Denver.
2. Storeroom in Denver Mint needs better organization and inventory control.
3. Each field office B&M Head related their normal practice for determining whether to produce in-house or purchase fabricated parts from outside sources. Results of the discussion are as follows:

D. Sjaardema for Denver:

Denver will almost always produce in-house. To determine this, the following are considered:

- A. comparison of cost - in-house vs. purchase
- B. existing work load
- C. assure availability of work force

Mr. Sjaardema stated that Denver would rather produce in-house mainly because they usually have the personnel capable of handling the job and feel that such jobs, being diversifications from the usual, keep the men interested in their work. Also, it can provide a good deal of indirect training.

A. Leone for Philadelphia:

Philadelphia will produce in-house rather than contract out if:

- A. cost of in-house production is less than purchase cost
- B. work load will allow for in-house production
- C. necessary work force is available

Most of the time, Philadelphia will purchase from the outside as a result of their not having the available work force to produce in-house.

R. Voss for San Francisco:

San Francisco will mostly purchase from outside sources. In-house production involves labor cost plus overhead cost; contracting for the item or service involves only labor cost. Therefore, Mr. Voss feels that by purchasing from outside sources he can keep the overhead costs to a minimum. Also, it would be more practical for San Francisco to produce in-house if the accounting system would separate overhead into 3 functions (Administrative Overhead, Production Overhead, and General Overhead) and charge the job appropriately.

Mr. Sjaardema advised that in his facility they can charge jobs which are not exclusive to one particular function to a special account number which will eventually be charged as an overall plant cost.

Mr. Voss stated that his manpower is based on his needs for normal maintenance. Therefore, when added jobs come up his people have to be rescheduled for them. Consequently, his "everyday operation" is left inadequately staffed. To this, Mr. Sjaardema advised that in his operation the PM jobs take priority over in-house work, such as new construction.

D. Weiss for New York:

The New York Assay Office will produce in-house about 99% of the time. The prime considerations at this facility in determining whether to produce in-house are cost and capability. If, in order to produce in-house, there is a need for a specific piece of equipment which is not on hand, they will make a determination as to the feasibility of buying it for that particular job.

4. As a result of a discussion on overtime, the following statements were presented by field offices B&M Heads.

Denver: Criteria for determining overtime work - Authority for overtime work in Denver is received from the Bureau. The overtime schedule is set up on a monthly requirements basis. The authorized time is then divided up and applied as necessary. Most maintenance is done during the week. Normally, there are 2 electricians that work as "back-up" on overtime.

Philadelphia: Criteria for determining overtime work - Production areas require services that need to be done but are usually scheduled (by Maintenance) to be done on the weekend. After being informed of this, Production will advise Mr. Seymour Rosenbaum (Deputy Superintendent) of the situation and the need for overtime work. Mr. Rosenbaum's approval of overtime is the authority by which Maintenance sets up their schedule for same.

San Francisco: Mr. Voss advised that he usually keeps only one supporting man available for overtime.

Mr. Ambrose added that, in his opinion, a certain amount of overtime is necessary for each facility. In comparing overtime cost to lost production time (in cost), it is more often than not economically beneficial to work discretionary overtime on a limited basis.

5. Mr. Ambrose asked each B&M Division Head to give a run-down on maintenance and other services which are under contract at their respective facilities. Following are the results:

Denver - presently has contracts for:

1. Closed circuit TV (\$2000)
2. Most security equipment (\$3000)
3. Service/inspection on one elevator per year (\$1500)
4. One boiler inspection (\$300)
5. X-Ray unit (1 service per quarter)
6. Rubbish removal (cost based on cubic yard)

Above services are charged to Maintenance cost. These costs are distributed quarterly to all production operations based on direct labor minutes in those areas.

Philadelphia - presently has contracted maintenance services for:

1. Chillers (annual contract with York) - \$5000
2. Cladding Mill (GE and Reliance)
3. Strip production equipment controls (allowed a certain number of calls per year)
4. Elevators and escalators (\$25,000) - (monthly or quarterly inspection; on call for PM and repairs or replacement)
5. Exterminating
6. Instrumentation maintenance (routine inspection with Honeywell)
7. Rubbish removal
8. Fire extinguishers (inspection and replacement)
9. Door mats (replaced on a weekly basis)

Mr. Leone feels that some of the above listed services could be done in-house if they were given additional manpower and training.

San Francisco - presently contracts services for:

1. Elevators (service on-call)
2. Scales
3. Security console
4. Rubbish removal

New York - presently contracts services for:

1. Security system (service twice yearly and on-call repair)
2. Telephone system (system being replaced)
3. Locks
4. Elevators
5. Rubbish removal
6. Laundry

Group instructed to reconvene at 8:00 a.m. Thursday.

Meeting adjourned.

THURSDAY - NOVEMBER 14, 1974

MORNING SESSION

Mr. Packwood opened the meeting at 8:00 a.m. Subject of meeting: New Layout of coining presses, blanking presses, and blank annealing equipment at the Denver Mint. Participating attendees: Messrs. Ambrose, Packwood, Sjaardema, Darlington, Lord, and Heinz.

(For group members not attending above meeting, time was scheduled for shop visits and discussions with counterparts)

The following items were established during the meeting:

1. Denver to receive 24 coining presses (to arrive after April, 1975); one 4000 pound blank annealing furnace and cleaning line on hand; six blanking presses (should arrive about March, 1976).
2. Denver is presently capable of running 4000 lb. bronze 15" coils. By April 1, 1975, they will be ready to run 8000 lb. bronze 15" coils. Their annual 1¢ strip contract with Anaconda expires in September (contract is for 11 15/16" width strip).
3. In order to handle 8000 lb. coils, 10,000 lb. fork-lift equipment will be necessary. Dick Lord working on specifications for same.
4. Entry and exit conveyors and cross-over conveyor on the slab annealing furnace will be removed to allow for more space immediately. At a later date, the slab annealing furnace and rolling mills (with associated equipment) will be taken out and stored at the Rocky Mountain Arsenal.
5. The remaining small dual coining presses will be taken out of the main pressroom and installed in the second floor melting area for use in medal production, foreign coinage production, and training.
6. Investigate the feasibility of locating the 4000 lb. blank annealing furnace on the lower level melt room roof with appropriate enclosure. There should be no problems as far as transporting the equipment or materials to that location.
7. Recommended that one of the two 2000 lb. blank annealing furnaces be put into the present melting area. This change would take place after the 4000 lb. furnace is operational so that no production time will be lost.
8. Melting furnaces should be left intact.
9. Recommendation to move some of the upsetting equipment to the melting area.
10. Considering sweep cellar and part of melting area for use as storage areas.

Mr. Ambrose advised that we will firm up on the strip fabrication to coining transfer plan in January.

Group instructed to reconvene at 1:00 p.m.

AFTERNOON SESSION

Meeting with Messrs. Packwood, Leone, Sjaardema, Voss, and Weiss.
Purpose: Develop a plan whereby selected key maintenance operatives can obtain benefits by cross-visitation similar to that for supervisory personnel.

The consensus developed was that a formalized cross-visitation program for B&M personnel of non-supervisory status was not required. First, the need for acquainting maintenance operatives with the detail and complexity of the management systems involved was considered unnecessary. Second, individual maintenance personnel, "key" to the maintenance function, apparently have a degree of job instability, either as a result of job changing or seniority and union effects, which makes a formal program impractical. Third, these men are, to a large degree, specialists with only cursory interest in the overall aspects of maintenance.

For these reasons, B&M management believes that the best approach is to treat cross-visitation by non-management (or non-professional) personnel on an ad hoc basis. That is to say that individual specialists, as specific technical problems arose, would first consult with personnel from other facilities by phone then, as was deemed necessary by management, would actually visit the other facility and shop for detailed exposure to techniques of interest. Additionally, the visiting specialist would be given a general plant tour, and detailed orientation in each of the maintenance shops and branches. A non-formalized program, such as this, would need be directed by the individual B&M Superintendents at their discretion.

The meeting subsequently directed its attention to other points of interest. These principally concerned the management systems under which B&M Divisions (and Production for that matter) were forced to operate. It was all too apparent that each manager felt an absence of timely and valid financial data reporting for making management decisions. The lack of cost and performance standards was also brought up. It was felt that the present accounting system did not lend itself to the support of operations management hence had no dynamic impact on the principal purpose of the Mint - namely Production.

The effects of purchasing and supplies upon maintenance hence production (generally well known so not repeated here), were again delved into.

The effects of the new union contract upon maintenance and production were discussed. It was note-worthy that most of the individuals present had not been provided a copy of the final contract nor indeed had even seen one.

Summary Meeting - 3:30 p.m.

This meeting was held with the entire group as it had been the preceeding days. It rather quickly developed into an assessment of the effectiveness of the entire program.

In covering the objectives originally set out by the Program Plan, the first - familiarization with facilities, personnel, and operation in the Denver Mint - was accomplished through tours, presentations, and by the individuals' personal visits to areas of their selection. The plant tours were generally considered successful. As to the presentation, everyone agreed that Mr. Sjaardema's approach was very thorough, informative, and well done. As it developed, several of the top management from other facilities had been prepared to make similar presentations relative to their management modes. This would, of course, have provided a good comparative look at operations and might easily be a desirable feature for future meetings.

The individual attendance at areas of greatest interest was highly praised by the shop foremen. The consensus was that the time spent in the shops was of greatest value. Several individuals made mention of gaining insight into labor and cost saving techniques in Denver which had direct applicability to their own shops.

It was generally conceded that this objective had clearly been met.

The second objective - that of developing stronger B&M communication between field offices - was discussed. It was agreed that a cross-visitation program certainly was a necessary first step in developing good communications rapport. This was deemed to be true relative to objectives three and four - exchange of operational information and recognition of common problems. It was noted, however, that a single meeting will not insure adequate cross-communication and exchange of information unless it is strongly supported and nurtured by management. Communications too frequently must be channeled up to the top, then over to the other field office, then down to the line. This cumbersome mode can, in a very great many circumstances, be circumvented by direct lateral communications (i.e. machine shop foreman to machine shop foreman) with no loss and, in fact, great gain to the field offices involved. However, it must be given the strongest management support and backing to be effective.

The fifth objective had been achieved in a previous context and was not brought up at this time.

Having completed all of the scheduled business of the Program Plan, the meeting was adjourned.

Report . Minutes of Building & Mechanical Cross Ventilation Meeting

Environmental Assessment of New Maine P.O. Facility

10 FEBRUARY 1972

TABLE OF CONTENTS

1.0 INTRODUCTION
2.0 PROJECT DESCRIPTION
3.0 SITE
4.0 LAND USE
5.0 ENVIRONMENTAL CONSIDERATIONS
5.1 WATER AND WASTE RESOURCES
5.2 VEGETATION AND FLORA RESOURCES
5.3 AIR QUALITY
5.4 WATER QUALITY AND WASTE DISPOSAL
5.5 NOISE CONTROL
5.6 AESTHETIC
5.7
5.8
5.9 POPULATION AND TRAFFIC
5.10 COMMUNICATION
6.0 SUMMARY AND CONCLUSIONS

ENVIRONMENTAL ASSESSMENT OF

THE NEW MAIN POST OFFICE FACILITY IN

HONOLULU, HAWAII

Prepared by

Ronald A. Darby and Associates
122 Oneawa Street
Kailua, Hawaii 96734

For the

U. S. ARMY ENGINEER DIVISION, PACIFIC OCEAN
BUILDING 96, FT. ARMSTRONG
HONOLULU, HAWAII 96813

TABLE OF CONTENTS

1.0	INTRODUCTION
2.0	PROJECT DESCRIPTION
3.0	SITE LOCATION RELATIVE TO FACILITY FUNCTION
4.0	LAND USE
5.0	ENVIRONMENTAL CONSIDERATIONS
5.1	WATER AND ENERGY RESOURCES
5.2	WILDLIFE AND FLORA RESOURCES
5.3	AIR QUALITY
5.4	WATER QUALITY AND WASTE DISPOSAL
5.5	NOISE CONTROL
5.6	AESTHETICS
5.7	PUBLIC HEALTH AND SAFETY
5.8	TRANSPORTATION
5.9	POPULATION AND URBAN GROWTH
5.10	COMMUNICATION
6.0	SUMMARY AND CONCLUSIONS

1.0

INTRODUCTION

This report is the result of a study to assess the effect that the construction, use, and operation of the new Post Office Facility in Honolulu will have on the immediate and long-term environment and the ecology of the area.

The study was authorized by Reference 1 and is structured to the guidelines in Reference 2 and 3. Auxiliary construction consists of parking areas for customers, officials, and employees; paved maneuvering areas for mail trucks adjacent to mail platforms; an underpass for air cargo movement to be located under a new road at the West property line; and all necessary utilities and landscaping.

The building will be approximately 400,000 gross square feet in area. The facility will process all incoming and outgoing mail for the State of Hawaii and provide service to the other islands in the state. It will house the approximately 200 administrative personnel now located in the Main Post Office located in the Federal Building, Honolulu, as well as those in the Postal Annex Building on the present site. Reference 4 details the various operations for processed mail in the facility.

The new facility will serve in the following ways:

2.0 PROJECT DESCRIPTION

The New Post Office Facility project consists of a one-story general industrial type building with a two-story office wing located on Lot 36-A-2B, Lot A-1-A-2, and portion of Lot 36-A-2A bounded on the North by Nimitz Highway; on the East by Rodgers Boulevard; on the South by Honolulu International Airport; and on the West by a future "Collector Road". Auxiliary construction consists of parking areas for customers, officials and employees; paved maneuvering areas for mail trucks adjacent to mail platforms; an underpass for air cargo movement to be located under a new road at the West property line; and all necessary utilities and landscaping.

The building will be approximately 400,000 gross square feet in area. The facility will process all incoming and outgoing mail for the State of Hawaii and provide service to the other islands in the state. It will house the approximately 200 administrative personnel now located in the Main Post Office located in the Federal Building, Honolulu, as well as those in the Postal Annex Building on the present site. Reference 4 details the various operations for processing mail in the facility.

The new facility will serve in the following main capacities:

1. Main Honolulu Post Office, providing centralized mail distribution, finance and lockbox service, as well as a self-service Postal Unit.
2. Sectional center facility serving 79 associate offices in Hawaii, and 12 additional Pacific island offices.
3. International exchange office for air and surface mails.
4. Customs segregation and examination office.
5. Military mail distribution and dispatch point for all Pacific areas.
6. Mail distribution point for Hawaii-based military personnel.
7. Transfer point for receipt and dispatch of all classes of mail, both surface and air.
8. Area supply and equipment office for all associate offices and Pacific islands.
9. Accountable paper depository.

The single-story portion of the facility will house the workroom as well as the following:

1. Service and box lobbies, on the south side adjacent to the office structure.
2. Customs area with separate public entrance on the north side.
3. Navy call area with separate entrance at the northeast corner of the building.
4. State and Federal agriculture inspection rooms meeting the specified isolation and disposal requirements.
5. Truck platform on the west side, providing spaces for loading and unloading sea-land trailers and containers, and star routes.
6. City platform on the east side providing space for bulk mailing, collection letters, loose parcels, and inter-station trucks.

7. Employee lounge, cafeteria and locker rooms.

The facility will operate 24 hours per day and will employ approximately 1,200 employees per 24 hour period. The number of employees is not expected to increase, but will remain the same or decrease in the next ten years due to new techniques and increased automation in mail handling. The present employment in the Post Office Annex facility is approximately 1,000 persons per 24 hour period (Reference 5).

The total volume of mail processed by the facility is expected to increase by approximately four percent (4%) per year (Reference 5). Therefore, allowance for possible expansion of the work area by approximately 34,000 square feet (by extending the north end of the building for approximately 75 feet) has been incorporated in the design.

Uninterrupted mail service will be provided by phasing the project so buildings Nos. 6 and 7 will remain in operation until completion of the new facility.

More detailed description of the project is available in References 6, 7 and 8.

3.0 SITE LOCATION RELATIVE TO FACILITY FUNCTION

Because the State of Hawaii is composed of separate island counties in the Mid-Pacific, an effective mail service must be based on the heavy utilization of the commercial air carriers. Since all out-of-state mail will be processed by the new Post Office Facility, it can be readily shown that the facility should be located contiguous to the Honolulu International Airport (HIA).

Presently forty-six percent (46%) of the total out-of-state mail volume is carried by aircraft using HIA. Fifty-four percent (54%) is transported by ship using Honolulu Harbor. Increased usage of air carriers for mail service in the future is anticipated, but is dependent on many factors including obtaining suitable rate structures from the airlines and the government agencies involved (Reference 5).

All interisland mail to and from Oahu will be processed in the new facility and carried by aircraft using HIA. Thirty-five percent (35%) of the total out-of-state surface mail volume involves airshipment to or from the other islands via HIA and the new facility (Reference 5).

In order to maintain a high quality mail service, mail shipments are based on the arrival and departure times of the commercial air carrier flights. Thus it is im-

perative to have a reliable means to quickly transport mail from the handling areas to the aircraft.

The out-of-state and interisland mail handling functions were transferred in 1967 from the Federal Building in downtown Honolulu to the Post Office Annex comprising several warehouse-type structures on the proposed project site. Presently incoming mail is transported by the airlines to transfer points at the HIA and then shuttled in five-ton Post Office trucks to the Annex over a route of approximately 1/2 mile including public roads. Outgoing mail is handled similarly, but in reverse order. A transfer office is presently maintained by the Post Office in the terminal building at HIA to coordinate these activities.

4.0

LAND USE

The project site consists of 24.6 acres of land which was originally part of the Damon Tract, then condemned for Navy use, and more recently turned over to the Post Office. The site presently has a dozen warehouse-type structures, some of which are in need of repair. The area between the structures consist of large paved areas of asphaltic concrete with small sections of unkept grass and weeds between.

The primary operations at the Post Office Annex occurs in Building No. 6. Five other buildings are also in use or partial use by the Post Office at the present time. The maintenance operation for Post Office vehicles now at the Annex will be permanently moved from the site to a new facility on the Sand Island Access Road to be completed in June 1972. The State Department of Transportation (DOT) currently uses two buildings and adjacent areas for servicing Wiki-Wiki busses. Also, one building with adjoining space is presently used by GSA for storing surplus automobiles. All tenants are on a 30 day lease and have been notified concerning plans for the new facility.

The project site will be bounded on all sides with roadways. The closest occupied structure will be ewa of the new Collector Road and is Building 30, an old wooden two-story building, housing Naval Oceanographic and Audit Offices.

Building 31, just ewa of Building 30, is of similar type and presently contains various offices of the Air Force. The HIA property on the south boundary is open parking area. The east boundary is Rodgers Boulevard bordering an open space, including a large fountain, leading to the HIA terminal complex. The northern boundary adjoins the right of way for Nimitz and Kamehameha Highways with a wide medial strip between them.

Future plans include the construction of the H-1 Freeway along the north boundary utilizing an elevated expressway with two three-lane roads below (Reference 9). The "HIA Development Plan - 1985" of 1968 (Reference 10) includes the U. S. Post Office Annex as well as a major air cargo facility on the ewa side of the new Collector Road.

The site is presently zoned "R-6, Residential" under the General Plan of the City and County of Honolulu and recognized as "Military Reservation". Public buildings are permitted in R-6, Residential Zoning. However, since the site will eventually be bounded by highway rights-of-way and HIA which is zoned "I-1, Light Industrial", the project was assumed "light industrial", designed accordingly to listed requirements such as noise standards, minimum yard requirements, height and sign regulations (Reference 6).

The suitability of the site for residential purposes is very poor from environmental considerations alone. For example, even with the existing roadways and present

airport operations, the site would not be considered acceptable for Federally funded housing under the noise exposure guidelines of HUD in Reference 11. Likewise, the noise exposures are (and will be) so great that the use of the site as a park, creating a maximum of open space, is very questionable.

Originally the new Post Office Facility was to be included in the Federal Building in downtown Honolulu. In this case the postal facility would be the offender from noise and traffic considerations since it is truly light industrial in nature and not compatible with municipal offices in the "Great Park" concept cited in Reference 12.

It is felt that locating the New Post Office Facility at the proposed site is near optimum land use when the following considerations are made:

- a.) The necessity of locating the facility contiguous to HIA.
- b.) The compatibility of the facility within a "light industrial" neighborhood.
- c.) The efficiency gained in the operation by the consolidation of the administrative offices with postal working sections.
- d.) The relinquishing of valuable space in the Federal Building and the HIA Terminal Building (air mail transfer office) for other purposes.
- e.) The site is owned and is in use by the Post Office at the present time.
- f.) The removal of postal traffic from downtown Honolulu.

5.0 ENVIRONMENTAL CONSIDERATIONS

The following evaluation of the effect that the New Post Office Facility will have on the ecology and environment includes:

- a.) The effect that the use and operation of the completed facility will have on the immediate environment and the ecology of the area, including both day-to-day activity as well as its cumulative, long term impact.
- b.) The effect of the construction activity on the immediate environment including any possible permanent alteration (in addition to the complete facility).

The contract specifications for this project (Reference 7) includes a section delineating the contractors' responsibility during demolition, site preparation and construction with respect to environmental protection. This section from Reference 7 appears as Appendix A of this report. Additionally, it is required that construction activities comply with applicable Federal, State and local laws and regulations covering pollution and abatement (Reference 13).

5.1 WATER AND ENERGY RESOURCES CONSUMED

The anticipated domestic water demand for the New Post Office Facility is 172 gallons per minute based on fixture units. Fire flow demand is based on applicable criteria for the area and type of facility. The service lines for the facility will be connected to the proposed 16-inch water main to be installed by the Airport Division, DOT along the new Collector Road. If the water main is not operational when the new post office is completed, a connection will be made to the existing 8-inch line fronting the north side of the building (Reference 6). No significant increase in demand for water is anticipated if the facility is expanded as planned.

Water needed for spraying to control dust during construction will be available from existing mains on the site.

Total connected electrical load for the new facility is anticipated to be 3,815 KVA with a demand KVA of 3,549 KVA. The primary electrical loads are airconditioning, lighting and automatic machinery. Allowance for twenty percent (20%) growth in the demand KVA has been made in the design. Electrical service to the facility will be below ground. An emergency standby generator has been included to serve exit and security lighting, fire alarm and security systems, and

5.1 WATER AND ENERGY RESOURCES CONSUMED

The anticipated domestic water demand for the New Post Office Facility is 172 gallons per minute based on fixture units. Fire flow demand is based on applicable criteria for the area and type of facility. The service lines for the facility will be connected to the proposed 16-inch water main to be installed by the Airport Division, DOT along the new Collector Road. If the water main is not operational when the new post office is completed, a connection will be made to the existing 8-inch line fronting the north side of the building (Reference 6). No significant increase in demand for water is anticipated if the facility is expanded as planned.

Water needed for spraying to control dust during construction will be available from existing mains on the site.

Total connected electrical load for the new facility is anticipated to be 3,815 KVA with a demand KVA of 3,549 KVA. The primary electrical loads are airconditioning, lighting and automatic machinery. Allowance for twenty percent (20%) growth in the demand KVA has been made in the design. Electrical service to the facility will be below ground. An emergency standby generator has been included to serve exit and security lighting, fire alarm and security systems, and

smoke venting equipment (Reference 6).

5.2 WILDLIFE AND FLORA

The facility will include a fueling system for gasoline powered Post Office trucks. It will include two 6,000 gallon buried gasoline storage tanks, a fuel dispensing pump, an air compressor, and air and water hose reels (Reference 6).

Generally, the demand for water and electrical resources increases over that required by the existing Post Office Annex. However, existing and proposed supply mains are readily able to handle the increased loads.

of a short study of Wildlife and Flora is reported in Reference 14. No rare species were found.

The new facility will have approximately 293,000 square feet of irrigated and landscaped space comprising some twenty-seven percent (27%) of the project site. All but one of the existing five palm trees on the site will be destroyed. The twenty-seven coconut palms on the right-of-way will not be destroyed. According to the landscape plan (Reference 8), one hundred forty-two (142) new trees of different varieties; one hundred five (105) new palms of different species; over seven thousand (7,000) new shrubs; and plantings of ground cover and vines will be planted at the new facility. Thus the amount of green space will not only be justified, but the quality of life will be increased.

5.2 WILDLIFE AND FLORA

Buildings and pavement presently cover an estimated eighty-eight percent (88%) of the 24.6 acres in the project site. Other than for five coconut palms, a Norfolk pine, and a patch of croton, the flora on the site generally consists of grasses and weeds growing in unpaved areas between the buildings and pavement. A narrow strip on the right-of-way (approximately 22,000 square feet) along Rodgers Boulevard is cared for and watered. In this strip there are twenty-seven coconut palms and numerous spider lily plants. The result of a short study of wildlife and flora is reported in Reference 14. No rare species were found.

The new facility will have approximately 293,000 square feet of irrigated and landscaped space comprising some twenty-seven percent (27%) of the project site. All but one of the existing five palm trees on the site will be destroyed. The twenty-seven coconut palms on the right-of-way will not be destroyed. According to the landscape plan (Reference 8), one hundred forty-two (142) new trees of different varieties; one hundred five (105) new palms of different species; over seven thousand (7,000) new shrubs; and miscellaneous ground cover and vines will be planted at the new facility. Thus the amount of green space will not only be doubled, but the quality of flora will be increased.

The only wildlife known are a few myna birds,

English sparrows, bufo toads, Gecos and some small fish in the ditch along the southern boundary. Numerous common insects are also present (Reference 14).

The landscaping at the new facility should be a boon to birds and the wildlife which will return after construction is completed.

The landscaping plan for the new facility endows the project with a very favorable effect on the flora and wildlife.

All unpaved areas within the site of the completed facility will be landscaped with trees, shrubbery and ground cover to provide an acceptable control for dust.

The facility will not have an incinerator and the only emissions from the building will be vented air from the toilets, a battery room and a paint room. These emissions are considered of negligible impact on the exterior atmosphere.

The interior atmosphere in the facility is conditioned and includes a dust collection system. The air is filtered and recirculated within the facility.

5.3 AIR QUALITY

Adequate control of dust during demolition, site preparation, and construction is required of the contractors by the contract specifications. See Paragraph 15 in Appendix A. Likewise no burning will be permitted during the construction phase.

As stated in Reference 13, the contractors will also have to comply to state Public Health Regulations with respect to dust control and exhaust emissions from trucks and equipment used during the construction phase (Reference 15). The Regulations, which will be effective March 21, 1972, include specific measurement criteria and limits for both "fugative dust" and motor vehicle emissions.

All unpaved areas within the site of the completed facility will be landscaped with trees, shrubbery and ground cover to provide an acceptable control for dust.

The facility will not have an incinerator and the only emissions from the building will be vented air from the toilets, a battery room and a paint room. These emissions are considered of negligible impact on the exterior atmosphere.

The interior atmosphere in the facility is airconditioned and includes a dust collection system. Design guidelines and engineering instruction for critical areas

involving gaseous emissions, e.g.; the battery room and paint shop, have been provided by the Corps of Engineers (Reference 16).

The mail trucks servicing the facility will have to comply to the state regulations in Reference 15. The number of diesel trucks hauling containers for the new facility will be the same as for the present Annex operation unless the volume of surface mail changes. Presently, two to three tractor-trailers operate under contract. The five-ton gasoline shuttle trucks now making approximately eighty runs per twenty-four hours will be discontinued and replaced by the mule and mail cart systems owned by the airlines using the underpass beneath Collector Road. The "mules" of some airlines are currently powered by liquid petroleum. The net effect for truck emissions should be a decrease.

The two hundred postal employees now at the administrative offices in the Federal Building will have the emissions from their automobiles contributing to air pollution at the new facility. However, this means that perhaps as many as two hundred automobiles will not be exhausting in downtown Honolulu, which is considered a more critical area. The area around the site of the new facility is relatively open and is favored with trade winds blowing out to sea.

5.4 WATER QUALITY AND WASTE DISPOSAL

The project site is on relatively level ground with drainage to the ditch along the south boundary. The ditch runs east along the north boundary of HIA into Keehi Lagoon at the Keehi Lagoon Beach Park. Though the ditch passes through a large industrial area, the water presently is of sufficient quality to allow abundant fish life when it becomes tidal on HIA property.

Section 8 in Appendix A demonstrates that the contractors are obligated to control erosion on the site during demolition, site preparation, and construction. Also they are not to dispose of any materials, wastes, etc. into the ditch without approval of the Contracting Officer. If state Water Quality Standards (Reference 17) are interpreted to affect the construction operation on this project, then the contractors must abide by the same.

It is felt that effective control of erosion and silting during construction of the project can be obtained at reasonable cost because of the existing relatively flat terrain and the concomitant low flow velocities of run-off water. Every effort should be made to spare the existing areas of ground cover on the mauka side of the ditch to minimize erosion.

For the completed facility, storm runoff

will be drained by swales and pipe culverts discharging into the existing ditch. Engineering analysis of the ditch has led to the conclusion that no modification of the ditch is necessary. All unpaved areas of the completed facility will be landscaped with trees, shrubbery and ground cover to provide an acceptable control of erosion and silting (Reference 6).

The project site is not in a flood plain of major drainage nor is it subject to tsunami flooding. The site is not within any established flood hazard area (Reference 18).

The area in the immediate vicinity of the project site is presently serviced by City and County of Honolulu sewage facilities. A 36-inch municipal gravity trunk line is available adjacent to the project site along the south boundary. The 24-inch military sewer traversing the project site will be relocated along Nimitz Highway and the east boundary. An easement 15-20 feet wide will be created with the design based on City and County of Honolulu Sewer Standards for future dedication (Reference 6).

The post office facilities will generate a sewage flow of one hundred forty-five (145) gallons per minute based on fixture units. The average flow based on an eight hour shift is one hundred twelve (112) gallons per minute (Reference 6).

Lines to service the proposed building will be appurtenant to the relocated line at the nearest feasible point. Sewer lines will be of sufficient slope to provide a velocity of at least two feet per second when the pipe is flowing full (Reference 6).

The only unusual discharges into the sanitary sewer system will be from the U. S. Department of Agriculture Plant Quarantine Station in the new facility. Objectionable pulpy plant material and meat material will be disposed through a 1.5 horsepower disposal unit and into the sewer line. Fibrous plant material is transported to the City and County of Honolulu incinerator for destruction. These techniques have been utilized for years by both civilian and military facilities with no harmful consequences. Presently, potentially harmful matter is transferred from the Post Office Annex building to the terminal at HIA for disposal. The new facility eliminates the possibility of contamination during this transfer period (Reference 19).

Solid waste material will be processed by a four (4) cubic yard compactor with a hydraulic power unit to minimize waste storage and pick-up efforts.

5.5 NOISE CONTROL

Two noise control regulations may affect the construction operations at the site of the New Post Office Facility. The Occupational Safety and Health Act of 1970 (Reference 20) could be the basis for assuring that operators of trucks and other equipment on the site do not receive an excessive noise exposure and thereby impair their hearing. The new state motor vehicular noise regulations will also be in effect and may require contractors operating trucks using the public roads to reduce vehicle noise levels, to limit vehicle use to certain hours, and/or to obtain permits (Reference 21).

Noise emanating from the site during construction does not come under any current regulations. Fortunately, no residential areas will be affected. Personnel in the military offices at the west end of the project site may suffer discomfort from construction noise, but even this should be minimal because most of the offices are believed to be airconditioned. If there is any pile driving it apparently is to be limited to the foundation of the postal office building which is on the opposite end of the site from the military offices, thus minimizing the discomfort from noise.

The noise from the operation of the completed facility should be within the noise limits in the Comprehensive

Zoning Code of the City and County of Honolulu (Reference 22) assuming the area is considered as "light industry" and motor vehicle noise is not considered. Again the only sensitive area will be the military offices, which are to be removed when the Ewa Air Cargo Terminal becomes a reality. Eventually, the Post Office Facility will be completely surrounded with roadways (elevated viaducts or ramps on two sides) and airport operations. Then there will be no possibility of the facility annoying its neighbors.

The noise exposure limits in the aforementioned Occupational Safety and Health Act of 1970 will not be exceeded in the new facility (Reference 23). A noise survey of automated postal facilities on the mainland (Reference 24) indicates that interior noise levels in similar facilities are substantially lower than levels causing hearing damage risk.

A noise survey of the project site was performed in July 1971 (Reference 25). It included present and projected noise levels from aircraft flyovers, aircraft ground operations and motor vehicular traffic. Based on data from the noise survey, the windows in the office building will be glazed for acoustical properties.

The noise criteria (NC) for various interior areas listed in Reference 16 served as guidelines in choosing partition systems (Reference 23).

Generally, the proposed project will have negligible effect on the already noisy environment at the site. The control of interior noise to acceptable levels has been considered in the design architecturally and in terms of the interior mechanization. The new building will have precast exposed aggregate panels with a heavy sculptured relief pattern. The roof, which will be viewed by passengers in aircraft using NIA as well as by motorists on the proposed elevated N-1 Freeway and interchange ramps, will be of aluminum sheet panels and relatively clear of vents, skylights, etc. The roof will be painted with a non-glare paint. All utility lines will be below ground.

In the main office and garden court areas special consideration has been given to such details in landscaping as variations of color, texture and form tied together in a cohesive design, creating interest while still maintaining the physical functions of pedestrian circulation, noise control, amount of maintenance and plant availability (Reference 6).

The airport road at the present is heavily used by travellers from all parts of the world. The project site is one of the first complexes a visitor would notice upon leaving the airport. An effort has been made to present an attractive frontage area with landscaping to the incoming and outgoing traveler (Reference 6).

Plantings along the boundaries enhance the proposed building, screen cars and other objectionable objects

5.6 AESTHETICS

The new building will have precast exposed aggregate panels with a heavy sculptured relief pattern. The roof, which will be viewed by passengers in aircraft using HIA as well as by motorists on the proposed elevated H-1 Freeway and interchange ramps, will be of aluminum sheet panels and relatively clear of vents, skylights, etc. The roof will be painted with a non-glare paint. All utility lines will be below ground.

In the main office and garden court areas special consideration has been given to such details in landscaping as variations of color, texture and form tied together in a cohesive design, creating interest while still maintaining the physical functions of pedestrian circulation, noise control, amount of maintenance and plant availability (Reference 6).

The airport road at the present is heavily used by travellers from all parts of the world. The project site is one of the first complexes a visitor would notice upon leaving the airport. An effort has been made to present an attractive frontage area with landscaping to the incoming and outgoing traveler (Reference 6).

Plantings along the boundaries enhance the proposed building, screen cars and other objectionable objects while still providing color and patterns to create interest.

These areas will be viewed in most cases from an automobile. The design reflects the influence of this view from the automobile.

The parking and maneuvering areas are characterized by large expanses of asphalt and long, narrow planting spaces with ten-foot high security fences along the boundaries. Basic consideration here included low landscape maintenance and freedom of breezes to flow through without obstruction. Objectives in these areas were mainly to provide shade and present varying colors, forms and textures to the long, narrow planting area (Reference 6).

The location of the new building will provide a broader vista of the HIA Terminal Complex from Nimitz Highway since the area now occupied by the Annex building will be parking and landscaping.

Generally the new facility will have a very positive effect on the aesthetics of the area compared to the present situation.

These areas will be viewed in most cases from an automobile. The design reflects the influence of this view from the automobile.

The parking and maneuvering areas are characterized by large expanses of asphalt and long, narrow planting spaces with ten-foot high security fences along the boundaries. Basic consideration here included low landscape maintenance and freedom of breezes to flow through without obstruction. Objectives in these areas were mainly to provide shade and present varying colors, forms and textures to the long, narrow planting area (Reference 6).

The location of the new building will provide a broader vista of the HIA Terminal Complex from Nimitz Highway since the area now occupied by the Annex building will be parking and landscaping.

Generally the new facility will have a very positive effect on the aesthetics of the area compared to the present situation.

5.7 PUBLIC HEALTH AND SAFETY

During the construction phase of the New Post Office Facility, the standard safety regulations (Reference 27) of the Army Corps of Engineers will be effected.

The probability of aircraft crashing into the new facility is very low because it is not under any major flight pattern. Overflights are restricted to light civilian aircraft at a minimum of 800 feet and regular commercial traffic at 2,000 feet or greater. Occasionally military jet fighters are involved in flight patterns over the site at 1,000 feet or greater altitudes. The advent of the reef runway should make all flyovers even more remote.

Present ground motion of aircraft should not provide any hazard. The air cargo terminal planned for the adjacent site introduces the possibility of danger. However, the air cargo terminal building could be constructed to minimize the damage to the Post Office should there be an aircraft explosion or fire.

All spaces in the building including the covered loading docks and maneuvering areas will be protected by a wet pipe type sprinkler designed in accordance with NFPA Pamphlet No. 13 for ordinary hazard. Portable fire extinguishers will be provided in accordance with the requirements of Reference 16. Hydrants will be located in order that all points of the

structure can be reached with a maximum of 300 feet of hose (Reference 6).

There is no danger of flash flooding or tsunami run-up at the site of the new facility. The automobiles of employees (approximately 1,000 per 24-hour period); mail trucks based at other Post Office stations; the approximately fifty mail trucks based at the Annex including about forty airport shuttle operations per 24-hours; the tractor-trailer hauling containers of surface mail (about seventy-two operations per week); and other miscellaneous vehicles.

During construction of the new facility uninterrupted mail service will be provided by allowing Buildings Nos. 6 and 7 to remain in operation until project completion. Thus, the movement of contractor's vehicles will be superposed on the present traffic flow. However, access to the Annex will be reasonably divorced from the construction operations and no major problems are foreseen.

In the new facility an air cargo road from the underpass to the intersection of Aiea Street and Elliott Street will be provided based on criteria submitted by the Department of Transportation, State of Hawaii. The airlines will haul mail directly to the new Post Office facility on this road using "trucks" and carts.

Prior to the completion of the proposed

5.8 TRANSPORTATION

Present traffic flow associated with the Post Office Annex operation on the project site involves the automobiles of employees (approximately 1,000 per 24-hour period); mail trucks based at other Post Office stations; the approximately fifty mail trucks based at the Annex including about forty airport shuttle operations per 24-hours; the tractor-trailer hauling containers of surface mail (about seventy-two operations per week); and other miscellaneous vehicles.

During construction of the new facility uninterrupted mail service will be provided by allowing Buildings Nos. 6 and 7 to remain in operation until project completion. Thus, the movement of contractor's vehicles will be superposed on the present traffic flow. However, access to the Annex will be reasonable divorced from the construction operations and no major problems are foreseen.

In the new facility an air cargo road from the underpass to the intersection of Aolele Street and Elliott Street will be provided based on criteria submitted by the Department of Transportation, State of Hawaii. The airlines will haul mail directly to the new Post Office Facility on this road using "mules" and carts.

Prior to the completion of the elevated

interstate highway (H-1), temporary access to the new facility will be provided to the employee parking and east side postal vehicle areas from Rodgers Boulevard. An exit opening from the postal vehicle area will also be provided to Nimitz Highway near the northeast corner. An emergency exit to Nimitz Highway will be provided near the southwest corner of the site. Upon completion of the highway, these access points will be abandoned and postal and employee vehicles will utilize a common permanent access to be provided at the intersection of the proposed makai Frontage Road (Nimitz Highway) and Rodgers Boulevard (Reference 6).

Access to the patron's parking area will be from the proposed Collector Street which will be constructed simultaneously with the postal building by the Department of Transportation. Access to the custom patron's parking area will be from Nimitz Highway. Access to the west side postal vehicle area will be from the proposed Collector Street near the northwest corner of the site. An exit opening from this maneuvering area to the proposed Collector Street will also be provided. An underpass structure provided beneath the proposed Collector Street will provide mail carts from the terminal area access to the postal building (Reference 6).

As advised by the Department of Transportation, there will be no access permitted along the entire south boundary and no permanent access along the entire east boundary (Reference 6).

Parking stalls for the employees and patrons of the new facility will be provided in conformance with the City and County of Honolulu Comprehensive Zoning Code. For handicapped employees and patrons, ten (10) foot wide spaces will be provided. Number of stalls provided will be in accordance with the provisions of Reference 4.

Design studies for the State Department of Transportation of the airport interchange for the proposed H-1 Freeway were based on traffic volume predictions in 1993 (Reference 9). Following is an excerpt from the Environmental Impact Statement for the H-1 Freeway (Reference 28) describing the airport interchange:

"Throughout the alignment of the freeway from Pearl Harbor Interchange to the Keehi Interchange, there will be a one-way three-lane frontage road at ground level on each side of the freeway. It is necessary to elevate the freeway in order to interconnect the frontage roads at all of the existing cross streets. This will provide a good circulatory pattern, provide access to adjacent properties, and minimize out-of-direction travel on the frontage roads.

The Airport Interchange is a fully directional type, three level interchange. It is independent of the frontage roads having no connections thereto. The interchange will provide access via the freeway to the Honolulu International Airport and to the future planned relocation of the Inter-Island Terminal in the Keehi Lagoon area.

The ingress ramps to the Airport are located at Rodgers Boulevard. Traffic to the Airport from the westerly direction on the freeway will have access to either the Main Terminal or to the Inter-Island Terminal at Keehi Lagoon via Aolele Street. Traffic to the

Airport from the easterly direction on the freeway will have access only to the Main Terminal. Access to the Keehi Lagoon area from the easterly direction will be provided at the Keehi Interchange via the Mauka Frontage Road.

The egress ramps from the Airport are located at Paiea Street. Traffic from both the Airport's Main Terminal and the Keehi Lagoon area will have access to the freeway in both directions. The ramps will be on a structure over Paiea Street with minimum disruption to existing businesses. Ultimately, future ramps from the expansion of the Airport's Main Terminal complex will connect to the ramp structure at Paiea and Aolele Streets."

Generally, the short term and long range impact of the New Post Office Facility on the motor vehicular traffic in the area should be minimal. This conclusion is based on the following:

- a.) The traffic flow at the new facility will not change appreciably over that now at the Annex. Traffic from the twenty percent (20%) increase in employees and people doing business with the administration unit will be partially offset by the elimination of airport shuttle runs and present travel between the Annex and other postal operations in the Federal Building, HIA Terminal and other facilities to be consolidated into the new facility. Mail truck traffic is expected to increase at four percent (4%) per year, but the number of employee automobiles should not change since the total number of employees at the facility is expected to remain the same.
- b.) The present and planned road systems involved in the operation of the facility are capable of handling the additional traffic without major disruption. For example, the daily traffic count in July 1971 for traffic ingress to HIA on Rodgers Boulevard was 10,148 vehicles while a both-direction count on Nimitz Highway was 24,569 vehicles in November 1970. Projected average daily traffic for the H-1

5.9 POPULATION
airport interchange in 1993 involve numbers such as 100,000 vehicles on the elevated H-1 viaduct and 16,000 vehicles traveling both direction on the frontage roads (Reference 9). The traffic associated with the New Post Office Facility presently and in the future represents a few percent of the total volumes.

Office Facility at or near the median of the population distribution on Oahu. Then most vehicular traffic associated with the operation would be minimized with the concomitant benefits of reduced traffic congestion as well as air and noise pollution. The population median for Oahu is now located in Kalihi. Continued development in western Oahu and the planning of "New Towns" there may well move the center further towards HIA.

Thus, in consideration of the desirability of locating the New Post Office Facility contiguous to HIA (see Section 5.6) and the population distribution trends, the proposed site is near ideal.

5.9 POPULATION AND URBAN GROWTH

It would be ideal to locate the New Post Office Facility at or near the median of the population distribution on Oahu. Then most vehicular traffic associated with the operation would be minimized with the concomitant benefits of reduced traffic congestion as well as air and noise pollution. The population median for Oahu is now located in Kalihi. Continued development in western Oahu and the planning of "New Towns" there may well move the center further towards HIA.

Thus, in consideration of the desirability of locating the New Post Office Facility contiguous to HIA (see Section 3.0) and the population distribution trends, the proposed site is near ideal.

5.10 COMMUNICATION

The impact of the New Post Office Facility on the overall communication picture in the islands is very favorable. The basic reason for the project is to enhance the present mail flow and to obtain the capability of handling future mail volumes which are projected to increase at four percent (4%) per year.

From a narrower scope, the new facility will have minimal impact on the telephone system. The primary effect will be the redistribution of the phone services now in use in downtown postal offices. Also a radio link between the new facility and selected postal vehicles will be initiated in the future. Compatibility with other RF systems will be maintained by obtaining proper clearances with the FCC and FAA.

No major detrimental impact on the environment and the ecology of the area is foreseen by the use and operation of the facility. Unavoidable factors having some impact on the project area are:

a.) The loss of some five large palm trees on the project site.

b.) The increase in passenger car traffic (and the concomitant air and noise pollution) caused by two hundred (200) employees transferred from other postal facilities.

However, the landscaping proposed for the site and the mitigation measures in Section 4.5 will offset these minor impact considerations.

6.0 SUMMARY AND CONCLUSIONS

A new Post Office Facility is needed to guarantee high quality mail service for the State of Hawaii in keeping with the four percent (4%) annual increase in mail volume. The existing operation is spread over offices in Honolulu, HIA and the temporary Annex buildings. It is very desirable to locate the new facility on the proposed site because of the following considerations: excellent access to HIA; good compatibility of the facility with the neighborhood environment and road systems; the close proximity to the population median of Oahu; the relinquishing of valuable space now occupied by postal offices in other locations; and the land is presently owned by the Post Office Service and is available.

No major detrimental impact on the environment and the ecology of the area is foreseen by the use and operation of the facility. Unavoidable factors having some impact in the project area are:

- a.) The loss of some five large palm trees on the project site.
- b.) The increase in passenger car traffic (and the concomitant air and noise pollution) caused by two hundred (200) employees transferred from other postal facilities.

However, the landscaping proposed for the site and the considerations in Section 5.3 will offset these minor impact considerations.

Generally, the proposed facility will have a favorable effect on the aesthetics of the area.

REFERENCES

Assumming all existing controls for preserving the environment during construction are exercised, no long term degradation of the area should occur. Minor unavoidable impacts caused by construction are:

- a.) Bothersome noise from construction to the occupants at the Military Office Buildings adjacent to the site.
- b.) Some increase in traffic volume due to contractors' vehicles.

1. "Draft Proposed Guidelines for Environmental Considerations in Corps of Engineers Postal Support Actions", DAEN-MCZ-MD, dated 9 December 1971.

2. "Functional Design Specifications for U. S. Post Office, Honolulu, Hawaii, Project 71109, dated 9 April 1971".

3. Discussions with Mr. M. Morada, General Superintendent of Mail, on 3 February and 5 February 1972.

4. Design Analysis - Main Post Office Facility, Honolulu International Airport", Lemmon, Pirooth, Haines, Jones & Ferrell (LHMF) dated 17 January 1972.

5. "Specifications" - U. S. Post Office, LHMF dated 17 January 1972.

6. "Working Drawings, Main Post Office Facility", LHMF.

(A.)

REFERENCES

1. Contract/Purchase Order No. DACW84-72-M-0215, issued by Deputy Division Engineer, Mid-Pacific U. S. Army Engineer Division, Pacific Ocean, Building 96, Fort Armstrong, Honolulu, Hawaii, dated 3 February 1972.
2. "Scope of Work, Environmental Post Office Facility, Honolulu", Environmental Resources Section, U.S.A.E.D., Pacific Ocean, dated February 1972.
3. "Draft Proposed Guidelines for Environmental Considerations in Corps of Engineers Postal Support Actions", DAEN-MCZ-MD, dated 6 December 1971.
4. "Functional Design Specifications for U. S. Post Office, Honolulu, Hawaii, Project 71109, dated 9 April 1971".
5. Discussions with Mr. M. Harada, General Superintendent of Mail, on 3 February and 5 February 1972.
6. Design Analysis - Main Post Office Facility, Honolulu International Airport", Lemmon, Freeth, Haines, Jones & Farrell (LFHJ&F) dated 17 January 1972.
7. "Specifications" - U. S. Post Office, LFHJ&F dated 17 January 1972.
8. "Working Drawings, Main Post Office Facility", LFHJ&F.

9. "Interstate Route H-1, Airport Inter-change-Pre-liminary Engineering Design Report; Halawa - Middle Street Joint Venture", Sunn, Low, Thomas and Hara, Inc.; July 1971.
10. "Honolulu International Airport Development Plan - 1985, Volume II", Peat, Marwick, Livingston and Co., August, 1968.
11. "External Noise Exposure Standards for New Construction Sites" Housing and Urban Development (HUD) Circular 1390.2 dated 4 August 1974.
12. "Honolulu Civic Center Master Plan of February 3, 1965."
13. "Environmental Considerations in Construction Contracts", Department of the Army, Engineer Technical letter 1110-3-141 dated 30 November 1970.
14. "Wildlife and Flora on the Proposed Post Office Site at the Honolulu International Airport" by Jack Troutwine, 6 February 1972.
15. "Air Pollution Control Implimentation Plan, Public Health Regulations, Chapters 42 and 43", State of Hawaii.
16. "Design Guidelines for Postal Facilities" Army Corps of Engineers, 15 December 1971.
17. "Public Health Regulations, Water Pollution Control, Chapter 37", State of Hawaii.
18. Discussion between R. Ibaracki, Environmental Resource Section, Corps of Engineers and R. Pulfrey, Flood Plan Information, Corps of Engineers on 4 February 1972.

19. Phone conversation between R. Ibaraki, Environment Resources Section, Corps of Engineers and E. J. Jackson, Department of Agriculture on 7 February 1972.
20. U. S. Public Law 91-596, "Occupational Safety and Health Act of 1970", dated 29 December 1970 and made effective 28 April 1971.
21. Public Health Regulations, "Vehicular Noise Control for Oahu, Chapter 44a", State of Hawaii to be effective 24 March 1972.
22. Comprehensive Zoning Code, City and County of Honolulu, Ordinance No. 3234.
23. Phone conversation between R. Fhlor, U. S. Postal Service, in Washington, D.C. and R. Darby on 4 February 1972.
24. "Exploratory Study of Environmental Conditions in Postal Installations", Southern Methodist University, 1 July 1968.
25. Letter report to F. S. Haines "On the Noise Environment at the Site of the New Post Office Building" from R. A. Darby dated 18 July 1971.
27. "General Safety Regulations" EM385-11-1, Army Corps of Engineers, March 1967.
28. "Final Environmental Impact Statement for Interstate H-1, Pearl Harbor Interchange to Middle St., Oahu, HI", State Highway Division, DOT, June 1971.

APPENDIX A

SECTION 1

ENVIRONMENTAL PROTECTION

INDEX

<u>Paragraph</u>	<u>Title</u>	<u>Page</u>
1.	GENERAL -----	
2.	APPLICABLE REGULATIONS -----	
3.	NOTIFICATION -----	
4.	SUBCONTRACTORS -----	
5.	IMPLEMENTATION -----	
6.	PROTECTION OF LAND RESOURCES -----	
7.	RECORDING AND PRESERVING HISTORICAL AND ARCHEOLOGICAL FINDS -----	
8.	PROTECTION OF WATER RESOURCES -----	
9.	MAINTENANCE OF VIEWPOINT FACILITIES -----	
10.	PROTECTION OF FISH AND WILDLIFE -----	
11.	GUARD SERVICE -----	
13.	BURNING -----	
14.	DISPOSAL OF CLEARED MATERIAL -----	
15.	DUST CONTROL -----	
16.	MAINTENANCE OF POLLUTION CONTROL FACILITIES DURING CONSTRUCTION -----	
17.	QUALITY CONTROL -----	

SECTION 1

ENVIRONMENTAL PROTECTION

1. GENERAL: Environmental protection shall consist of the prevention of environmental pollution during and as the result of construction operations under this contract (except for those measures set forth in other Technical Provisions of these specifications). For the purpose of this specification environmental pollution is defined as the presence of chemical, physical, or biological elements or agents which adversely affect human health or welfare; unfavorably alter ecological balances of importance to human life; affect other species of importance to man; or degrade the utility of the environment for aesthetic and recreational purposes. The control of environmental pollution requires consideration of air, water, and land, and involves noise, (solid waste-management and management of radiant energy and radioactive materials) as well as other pollutants.

2. APPLICABLE REGULATIONS. In order to prevent, and to provide for abatement and control of, any environmental pollution arising from the construction activities of the Contractor and his subcontractors in the performance of this contract, they shall comply with all applicable Federal, State, and local laws, and regulations concerning environmental pollution control and abatement, and all applicable provisions of the Corps of Engineers Manual, EM 385-1-1, dated 1 March 1967, entitled "General Safety Requirements," (as well as the specific requirements stated elsewhere in the contract specifications).

3. NOTIFICATION. The Contracting Officer will notify the Contractor in writing of any non-compliance with the foregoing provisions and the action to be taken. The Contractor shall, after receipt of such notice, immediately take corrective action. If the Contractor fails or refuses to comply promptly, the Contracting Officer may issue an order stopping all or part of the work until satisfactory corrective action has been taken. No part of the time lost due to any such stop orders shall be made the subject of a claim for extension of time or for excess costs or damages by the Contractor unless it was later determined that the Contractor was in compliance.

4. SUBCONTRACTORS. Compliance with the provisions of this section by subcontractors will be the responsibility of the Contractor.

5. IMPLEMENTATION. Prior to commencement of the work the Contractor shall:

a. submit in writing his proposals for implementing this section for environmental pollution control, including training for his personnel;

b. meet with the Contracting Officer or his authorized representatives to develop mutual understandings relative to compliance with this provision and administration of the environmental pollution control program.

6. PROTECTION OF LAND RESOURCES.

6.1 General: It is intended that the land resources within the project boundaries and outside the limits of permanent work performed under this contract be preserved in their present condition or be restored to a condition after completion of construction that will appear to be natural and not detract from the appearance of the project. Insofar as possible, the Contractor shall confine his construction activities to areas defined by the drawings and specifications² (or to quarry and borrow areas indicated on the drawings³). The following additional requirements are intended to supplement and clarify the requirements of the GENERAL PROVISIONS, Articles PROTECTION OF EXISTING VEGETATION, STRUCTURES, UTILITIES, AND IMPROVEMENTS; OPERATIONS AND STORAGE AREAS; and CLEANING UP.

6.2 Prevention of Landscape Defacement: Except in areas marked on the drawings to be cleared, the Contractor shall not deface, injure, or destroy trees or shrubs, nor remove or cut them without prior approval. Trees designed to be saved shall be protected from either excavation or filling within the root zone closer than the normal dripline of the tree. No ropes, cables, or guys shall be fastened to or attached to any existing trees for anchorages unless specifically authorized by the Contracting Officer. Where such special emergency use is permitted, the Contractor shall first adequately wrap the trunk with a sufficient thickness of burlap or rags over which softwood cleats shall be tied before any rope, cable, or wire is placed. The Contractor shall in any event be responsible for any damage resulting from such use. Where, in the opinion of the Contracting Officer, trees may possibly be defaced, bruised, injured, or otherwise damaged by the Contractor's equipment, or other operations, he may direct the Contractor to protect adequately such trees by placing boards, planks, or poles around them. ⁴When earthwork operations are liable, in the opinion of the Contracting Officer, to cause rock to roll or otherwise be displaced into uncleared areas, the Contractor shall construct barriers to protect the trees. Rocks that are displaced into uncleared areas shall be removed. Monuments, markers and works of art shall be protected similarly before beginning operations near them. A preconstruction survey including photographs shall be accomplished by the Contractor and a report of survey furnished when required by the Contracting Officer⁵.

6.3 Restoration of Landscape Damage: Any trees or other landscape feature scarred or damaged by the Contractor's equipment or operations shall be restored as nearly as possible to its original condition at the Contractor's expense. The Contracting Officer will decide what method of restoration shall be used, and whether damaged trees shall be treated and healed or removed and disposed of under requirements for clearing and grubbing. All scars made by equipment and construction operations on trees, not designated on the drawings be removed, or by the removal of limbs larger than 1-inch in diameter shall be coated as soon as possible with an approved tree wound dressing. All trimming or pruning shall be performed in an approved manner by experienced workmen with saws or pruning shears. Tree trimming with axes will not be permitted. Where tree climbing is necessary, the use of climbing spurs will not be permitted. The use of

climbing ropes shall be required by the Contracting Officer where deemed necessary for safety. Trees that are to remain, either within or outside established clearing limits, that are subsequently damaged by the Contractor and are beyond saving in the opinion of the Contracting Officer, shall be immediately removed and replaced with a nursery-grown tree of the same species.

6.4 Location of temporary field office and storage facilities: The location on Government property of the Contractor's field office, storage, and other construction buildings, required temporarily in the performance of the work, shall be located as indicated on the drawings or as directed by the Contracting Officer.

⑤6.5 Temporary Excavation and Embankments: If the Contractor proposes to construct temporary roads or embankments and excavations, he shall submit the following for approval at least thirty (30) days prior to scheduled start of such temporary work.

6.5.1 A layout of all temporary roads, excavations and embankments to be constructed.

6.5.2 Details of road construction as required.

6.5.3 Details of the completed quarry excavation as required.

6.5.4 Plans and cross sections of proposed embankments and their foundations, including a description of proposed materials.

6.5.5 A landscaping plan prepared by a competent landscape architect showing the proposed restoration of the area. Removal of any necessary trees and shrubs outside the limits of existing clearing or quarry area shall be indicated. The plan shall also indicate location of required guard posts or barriers required to control vehicular traffic passing close to trees and shrubs to be maintained undamaged. The plan shall provide for the obliteration of construction scars as such and shall provide for a reasonably natural appearing final condition of the area. Modification of the Contractor's plans shall be made only with the written approval of the Contracting Officer. No unauthorized road construction, excavation or embankment construction (including disposal areas) will be permitted.)

6.6 Post-Construction Cleanup or Obliteration: The Contractor shall obliterate all signs of temporary construction facilities such as (haul roads,) work areas, structures, foundations of temporary structures, stockpiles of excess or waste materials, or any other vestiges of construction as approved by the Contracting Officer. Excavation, filling and plowing of roadways will be required to restore the area to near natural conditions which will permit the growth of vegetation thereon. The disturbed areas shall be graded and filled as required. ⑤(Turfing shall be as specified under Section: ESTABLISHMENT OF TURF).

(7. RECORDING AND PRESERVING HISTORICAL AND ARCHEOLOGICAL FINDS: All items having any apparent historical or archeological interest which are discovered in the course of any construction activities shall be carefully preserved. The Contractor shall leave the archeological find undisturbed and shall immediately report the find to the Contracting Officer so that the proper authorities may be notified^(S))

8. PROTECTION OF WATER RESOURCES:

8.1 General: The Contractor shall not pollute water resources^(S), including streams, lakes or reservoirs) with fuels, oils, bitumens, calcium chloride, acids, construction wastes, or other harmful materials. It is the responsibility of the Contractor to investigate and comply with all applicable Federal, State, County and Municipal laws concerning pollution of water resources. All work under this contract shall be performed in such a manner that objectionable conditions will not be created^(S) (in streams through or adjacent to the project areas).

8.2 Erosion Control: Prior to any major construction the Contractor shall submit a plan for approval of the Contracting Officer showing his scheme for controlling erosion and disposing of wastes as part of the requirements for Plant Layout Drawings contained in the SPECIAL PROVISIONS. Surface drainage from cuts and fills within the construction limits, whether or not completed, and from borrow and waste disposal areas, shall, if turbidity producing materials are present, be held in suitable sedimentation ponds or shall be graded to control erosion within acceptable limits. Temporary erosion and sediment control measures such as berms, dikes, drains, or sedimentation basins, if required to meet the above standards, shall be provided and maintained until permanent drainage and erosion control facilities are completed and operative. The area of bare soil exposed at any one time by construction operations should be held to a minimum. Stream crossings by fording with equipment shall be limited to control turbidity and in areas of frequent crossings temporary culverts or bridge structures shall be installed. Any temporary culverts or bridge structures shall be removed upon completion of the project. Fills and waste areas shall be constructed by selective placement to eliminate silts or clays on the surface that will erode and contaminate adjacent streams. When the flow of the^(S) _____ measured at^(S) _____ is less than^(S) _____ c.f.s. the Contractor shall not create a condition which increases the turbidity of the^(S) _____ by more than _____ units. as measured above and below the site of the particular construction activity causing the turbidity. When the flow exceeds^(S) _____ c.f.s. the Contractor's operations shall not increase the turbidity of the river a total of more than _____ units. Turbidity sampling and testing will be performed by the Government and the information obtained will be used as a control for construction operations which would result in increased turbidity of the stream. Turbidity determinations will conform to "Standard Methods for the Examination of Water, Sewage and Industrial Wastes," Twelfth Edition, 1965. In the event the above allowable increases in turbidity are exceeded, the Contractor shall suspend the operation or operations causing turbidity, and such suspension will not form the basis for a claim against the Government.

8.3 Spillages: Special measures shall be taken to prevent chemicals, fuels, oils, greases, bituminous materials, waste washings, herbicides and insecticides, and cement and surface drainage from entering public waters.

⑧8.4 Washing and curing water: Water used in embankment material processing, aggregate processing, concrete curing, foundation and concrete lift cleanup, and other waste waters shall not be allowed to reenter the river if an increase in the turbidity of the river will result therefrom. The Contractor shall be solely responsible for removing from within the cofferdam all wash, curing, and waste waters derived from sources either within or outside the cofferdam.⑧)

⑧8.5 Cofferdam and diversion operations: The Contractor shall plan his operations and perform all work necessary to minimize increase in turbidity of the water during required construction, (unwatering, removal of cofferdams, tailrace excavation, and tunnel closure operations. Only during cofferdam excavation and the placement of impervious fill, unwatering cofferdam, constructing closure embankment, and tailrace excavation, will the Contractor be permitted to exceed the above turbidity limits.⑧)

⑧8.6 Disposal: Disposal of any materials, wastes, effluents, trash, garbage, oil, grease, chemicals, etc., in areas adjacent to streams shall be subject to the approval of the Contracting Officer for reasons similar to those stated above. If any waste material is dumped in unauthorized areas the Contractor shall remove the material and restore the area to the condition of the adjacent undisturbed area. If necessary, contaminated ground shall be excavated, disposed of as directed by the Contracting Officer, and replaced with suitable fill material, compacted and finished with topsoil all at the expense of the Contractor.⑧)

⑧9. MAINTENANCE OF VIEWPOINT FACILITIES: The viewpoint facilities overlooking the work area shall be maintained in satisfactory condition as directed by the Contracting Officer.⑧)

⑧10. PROTECTION OF FISH AND WILDLIFE. The Contractor shall at all times perform all work and take such steps required to prevent any interference or disturbance to fish and wildlife. The Contractor will not be permitted to alter water flows or otherwise disturb native habitat adjacent to the project area which, in the opinion of the Contracting Officer, are critical to fish or wildlife. Fouling or polluting of water will not be permitted. Wash waters and wastes shall be processed, filtered, ponded, or otherwise treated (as hereinafter specified) prior to their release into the river (or other body of water).⑧)

⑧11. GUARD SERVICE: The Contractor shall provide security guard services in the project area to control all access to the area. Rules and regulations governing control of access will be established by the Contractor and approved by the Contracting Officer.

13. BURNING: Burning will not be permitted.

14. DISPOSAL OF CLEARED MATERIAL: All cleared material shall be hauled away and be disposed of by the Contractor outside the project limits.

15. DUST CONTROL: The Contractor shall maintain all excavations, embankments, stockpiles, (haul roads, permanent access roads, plant sites, waste areas, borrow areas,) and all other work areas within or without the project boundaries free from dust which would cause a hazard or nuisance to others. Approved temporary methods of stabilization consisting of sprinkling, chemical treatment, light bituminous treatment or similar methods will be permitted to control dust. Sprinkling, to be approved, must be repeated at such intervals as to keep all parts of the disturbed area at least damp at all times, and the Contractor shall have sufficient competent equipment on the job to accomplish this if sprinkling is used. Dust control shall be performed as the work proceed and whenever a dust nuisance or hazard occurs.

16. MAINTENANCE OF POLLUTION CONTROL FACILITIES DURING CONSTRUCTION: During the life of this contract the Contractor shall maintain all facilities constructed for pollution control under this contract as long as the operations creating the particular pollutant are being carried out or until the material concerned has become stabilized to the extent that pollution is no longer being created. During the construction period the Contractor shall conduct frequent training courses for his maintenance personnel. The curricula should include methods of detection of pollution, familiarity with pollution standards, and installation and care of vegetation covers, plants and other facilities to prevent and correct environmental pollution.

17. QUALITY CONTROL: The contractor shall establish and maintain quality control for this section to assure compliance with contract requirements and maintain records of his quality control for all construction operations including, but not limited to the items listed hereinbelow. Two copies of Construction Quality Control report and tests, as well as the records of corrective action taken will be furnished as required by SPECIAL PROVISION CONTRACTOR QUALITY CONTROL.

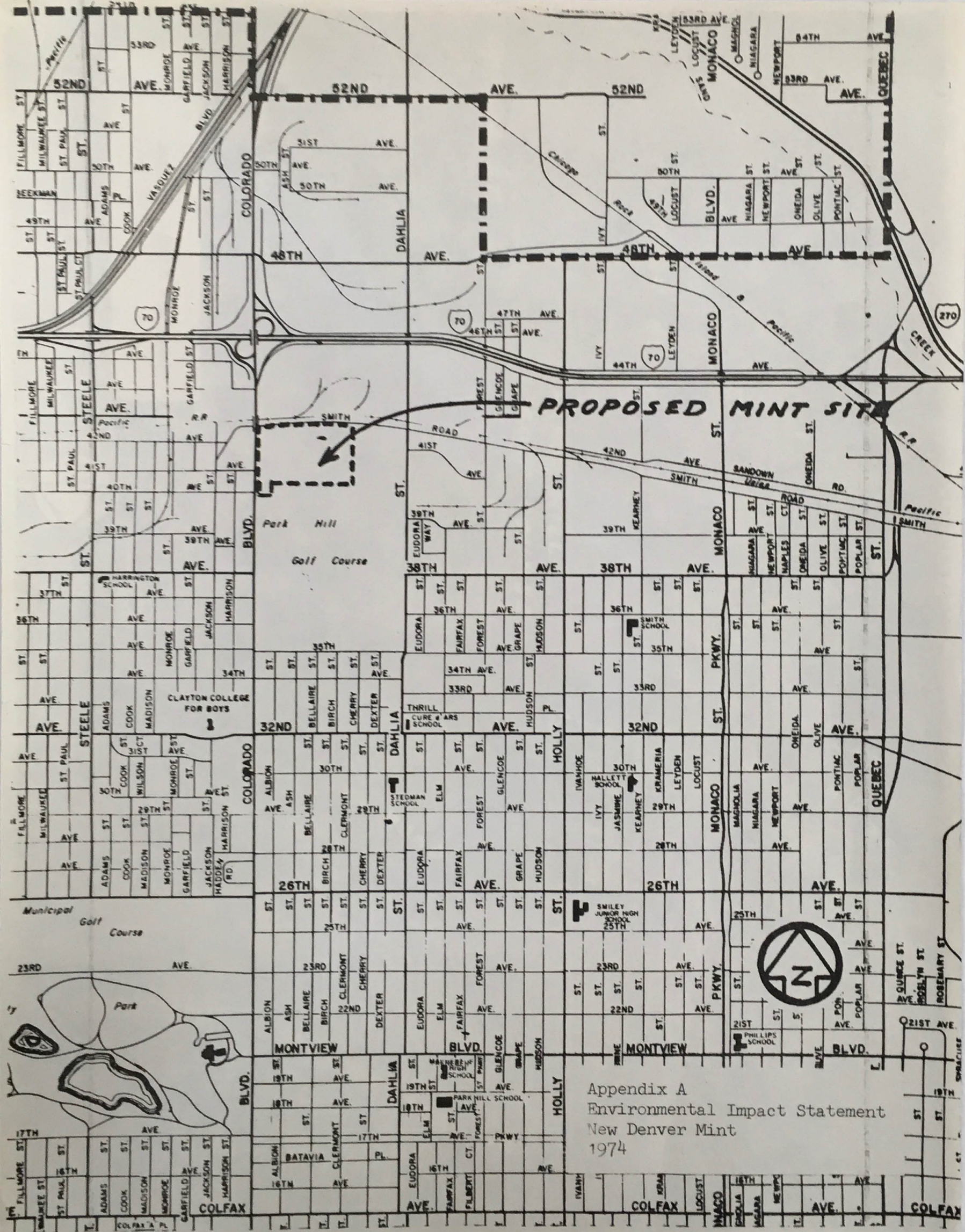
Compliance with applicable regulations

Implementation

Protection of resources

Dust control

-0-



Appendix B
Environmental Impact Statement
New Denver Mint
1974



HOLLY ST.

DAHLIA ST.

COLORADO BLVD.

32ND AVE.

35TH AVE.

PARK HILL
GOLF COURSE

Proposed
Mint site

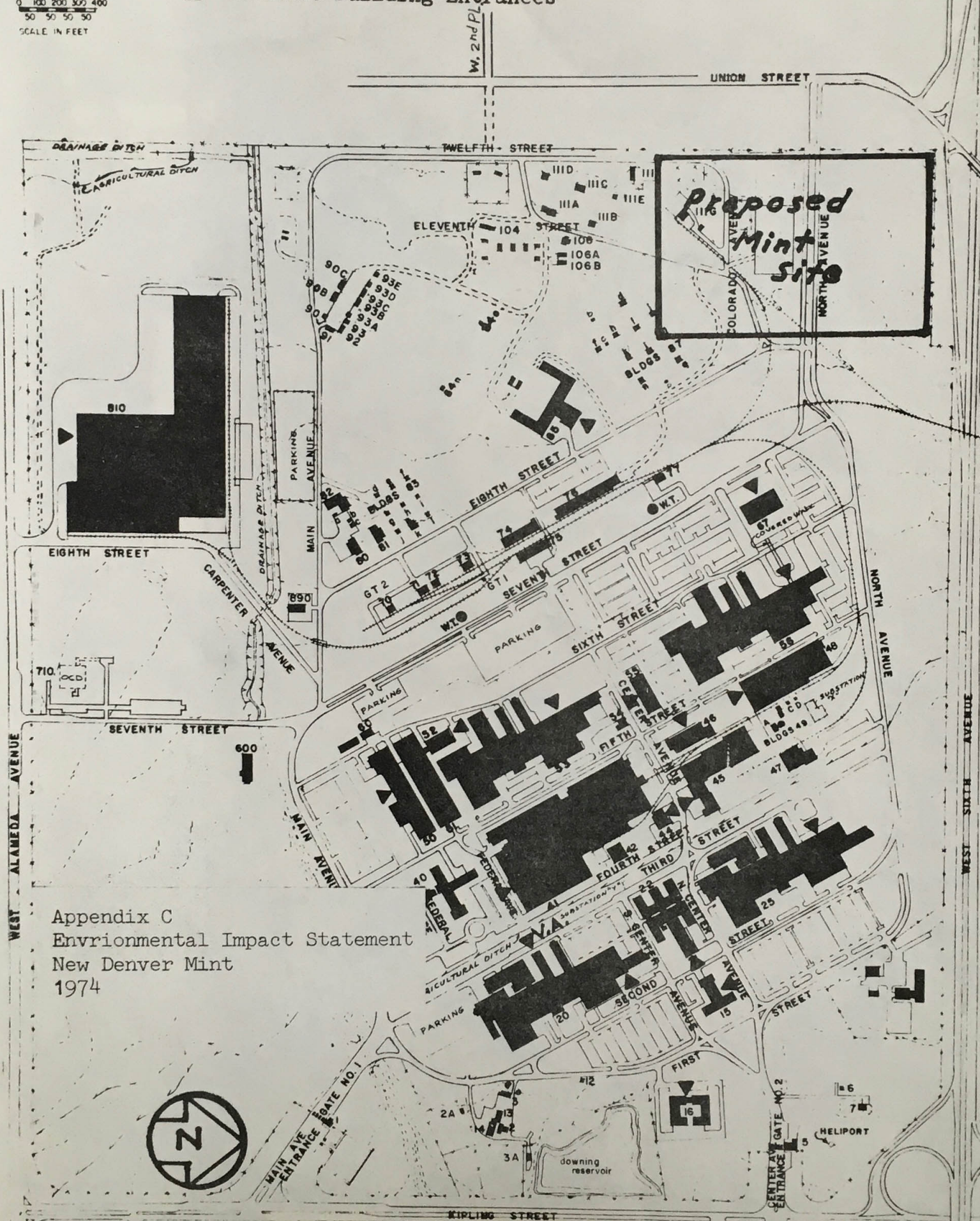
40TH AVE

SMITH ROAD

INTERSTATE "70"



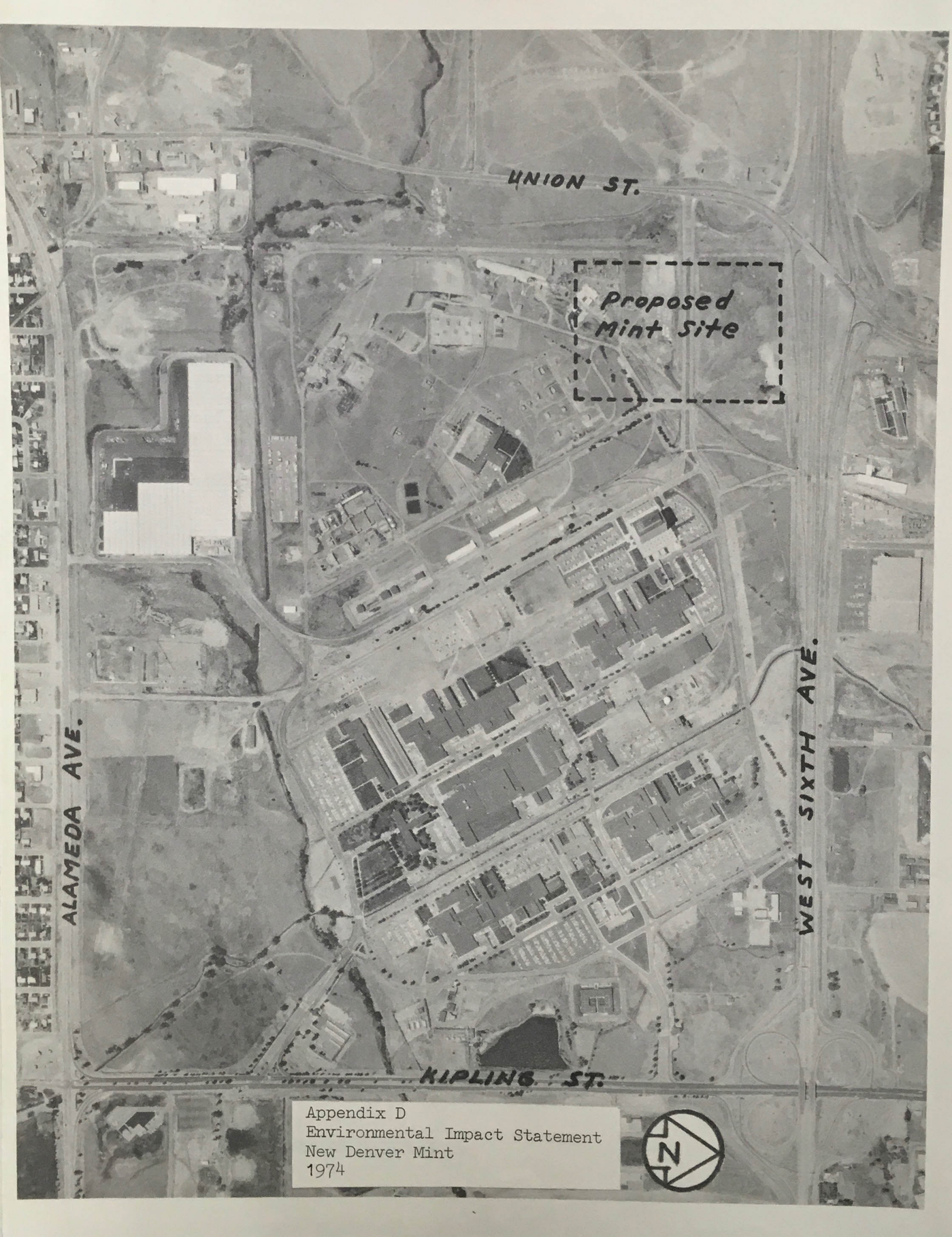
▲ Indicate Building Entrances



Appendix C
Environmental Impact Statement
New Denver Mint
1974

DENVER FEDERAL CENTER

DATE OF
REVISION: 30 OCTOBER 68



UNION ST.

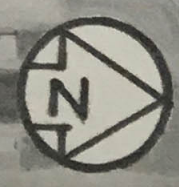
Proposed
Mint Site

ALAMEDA AVE.

WEST SIXTH AVE.

KIPLING ST.

Appendix D
Environmental Impact Statement
New Denver Mint
1974



EMISSION REDUCTIONS REQUIRED

1971 was the base year for the purpose of determining the emission reductions required during the development of the implementation plan for the State of Colorado. The only monitoring station in Denver continuously recording carbon monoxide, total oxidants, and nitrogen oxides during 1971 was the downtown Denver CAMP station located at 21st and Broadway. The emission reduction required for carbon monoxide was determined by use of the "roll-back" technique. The emission reduction required for hydrocarbons to achieve the photochemical oxidant standard was determined using the relationship expressed in Appendix J of the Federal Register (August 14, 1971, p. 15502). The calculations submitted in the implementation plan are as follows:

Carbon monoxide: (8-hour period)

Data period = January 1 - December 31, 1971

Second highest 8-hour average = 24.7 ppm

National standard = 9 ppm, 8-hour average

Percent reduction in CO emissions required to achieve the 9 ppm standard = 64%

$$\frac{A-C}{A-B} \times 100 = \text{Percent reduction needed}$$

Where:

A = Existing air quality at the location having the highest measured concentration in the region.

B = Background concentration

C = National standard

A = 24.7 ppm, B = 0 ppm, C = 9 ppm

$$\frac{A-C}{A-B} \times 100 = \frac{24.7-9}{24.7-0} \times 100 = 64\%$$

Carbon monoxide: (1-hour period)

Data period = January 1 - December 31, 1971

Second highest 1-hour CO average = 51 ppm

National standard = 35 ppm, 1-hour average

Percent reduction in CO emissions required to achieve the 35 ppm standard = 31%.

$$\frac{A-C}{A-B} \times 100 = \frac{51-35}{51-0} \times 100 = 31\%$$

Hydrocarbons

Data period = January 1 - December 31, 1971

Second highest 1-hour oxidant average = .18 ppm

National standard = .08 ppm

Percent reduction in hydrocarbon emission required to achieve the national standard (.08 ppm) for oxidants = 60%.

Percent reduction required taken from the Federal Register, (August 14, 1971, p. 15502, Appendix J).

Nitrogen dioxide

Denver AQCR classified priority III

CAMP STATION CHARACTERISTICS

The EPA-owned Denver CAMP station has been operated in Denver since 1965 under the terms of a cooperative project agreement. It has been a valuable resource to the EPA and to the State of Colorado for the purpose of assessing the magnitude of the air pollution problem in Denver. Although the station has been of value, serious questions should be raised in regard to the potential of the station to make representative measurements of several pollutants.

The station is situated in the middle of a traffic island bounded by Champa, Broadway, and 21st. The sampling intake is approximately 15 feet above ground level. Horizontal distances to street curb are 20 feet, 30 feet, and 45 feet for Broadway, Champa, and 21st, respectively. Since the station is near dense, slow-moving traffic, the highest 1-hour oxidant levels are not likely to occur in this area. Motor vehicles are known to emit nitric oxide in significant quantity and nitric oxide is known to consume ozone. Oxidant (ozone) measurements would be more representative if they were made several miles downwind of the central business district during the ozone season. The same reasoning holds true for nitrogen dioxide since it is considered to be more a secondary pollutant than a primary stationary-source pollutant. In the case of carbon monoxide, the area in the vicinity of the CAMP station probably is representative of maximum carbon monoxide concentrations in the city. It should be noted, however, that there are currently two ambient air standards for carbon monoxide. The first is a 1-hour standard of 35 ppm not to be exceeded more than once a year. The second is an 8-hour standard of 9 ppm not to be exceeded more than once a year. At any given location, the 8-hour standard would probably be more difficult to meet. This is the case in regard to the CAMP station since violations of the 8-hour standard required a 64% reduction in CO emissions while violations of the 1-hour standard required only a 31% reduction.

SAMPLING LOCATION CRITERIA

The Environmental Protection Agency has recently published sampling location guidelines for installing air monitoring instruments.¹ Of particular note are guidelines for carbon monoxide, oxidants, and nitrogen dioxide. They are as follows:

<u>Pollutant</u>	<u>Station location</u>
CO (1-hr. avg.)	Representing area containing dense, slow-moving traffic, obstructions to air flow (tall buildings), and pedestrian population, such as a major downtown traffic intersection (< 20 feet from street curb).
CO (8-hr. avg.)	Representing area of high traffic density in residential area, such as major thoroughfare in central city or suburban area (< 50 feet from street curb).
O ₃	Representing residential area downwind of downtown area (5 to 15 miles from downtown and > 300 ft. from major traffic arteries or parking areas).
NO ₂	Representing residential area downwind of downtown area (< 5 miles from downtown).

It is important to note that the site criteria for the 1-hour CO standard and the 8-hour CO standard are not necessarily met by the same monitoring station. The

Denver CAMP station meets the guideline for the 1-hour standard but possibly not the guideline for the 8-hour standard. The CAMP station would not seem to represent an area of high traffic density in a residential area. Although there are a number of dwellings in the general vicinity, it would be extremely difficult to classify what would seem to be a commercial area as generally residential. Another consideration should be an evaluation of the likelihood of significant public exposure to the high carbon monoxide levels measured at the CAMP station over a full 8-hour period.

In regard to oxidants and nitrogen dioxide, the CAMP station location is such that measurements made there would not be representative of probable maximum pollutant concentrations in the Denver AQCR.

EXAMINATION OF CARBON MONOXIDE EXPOSURE

Ott and Eliassen² have discussed the use of air quality data in relation to problems associated with carbon monoxide monitoring. One important use of air quality data is in support of scientific research investigations. An assumption in such investigations appears to be that data from an urban air monitoring station is "representative" of air quality in a large physical area surrounding the station. Ott's study has shown that air monitoring stations give drastically different results when moved only a block or two. These findings would seem to apply to Denver as well as San Jose. Information obtained from other monitoring stations in Denver with different site characteristics is useful in determining what is really "representative" for Denver.

Another use of monitoring data is to assess the impact of control efforts on long-term air quality trends. The CAMP station would be of value in this regard since it is the oldest operative station. Problems may still arise in trend evaluation if CO levels fall as merely a result of reductions in traffic on streets adjacent to the station while concentrations over the city remain about the same.

Probably the most important use of air quality data is in the implementation of national air quality standards in accordance with the 1970 Clean Air Act. Under existing federal policies, these standards, which apply in air quality control regions throughout the United States, are concentrations which "are not to be exceeded more than once a year" in the "ambient air" which is defined as "that portion of the atmosphere, external to buildings, to which the public has access."³

Ott has shown that the San Jose monitoring station underestimates the CO concentrations experienced by pedestrians on downtown First Street in San Jose and overestimates concentrations present at locations randomly distributed throughout a 13-square-mile survey grid. Data collected at several points in and around Denver show that CO concentrations are overestimated by the downtown CAMP station. Data does not as yet exist as to whether or not the downtown station underestimates the CO concentrations experienced by pedestrians. It should be noted that the new CO monitoring stations are not as traffic-oriented as the downtown station. It is clear that results from any single station will not serve to answer all questions in regard to carbon monoxide air quality.

Number of Violations
of the 1-hour 35ppm carbon monoxide standard by station
(Highest single concentration shown in parentheses)

*Don Fred
Carter*

STATION MONTH	CAMP	NAT'L. JEWISH	OVERLAND	CARIH
January, 1973	5 (43)	ND	ND	ND
February, 1973	0 (33)	0 (27)	ND	ND
March, 1973	0 (23)	0 (20)	0 (10)	ND
April, 1973	0 (19)	0 (18)	0 (12)	0 (8)
May, 1973	0 (18)	0 (15)	0 (10)	0 (14)
June, 1973	0 (20)	0 (12)	0 (7)	0 (12)

Number of Violations
of the 8-hour 9 ppm carbon monoxide standard by station
(Highest single concentration shown in parentheses)

*Don Fred
Carter*

STATION MONTH	CAMP	NAT'L. JEWISH	OVERLAND	CARIH
January, 1973	262 (32)	ND	ND	ND
February, 1973	141 (17)	58 (13)	ND	ND
March, 1973	42 (14)	7 (11)	0 (6)	ND
April, 1973	30 (11)	0 (8)	0 (8)	0 (6)
May, 1973	5 (10)	0 (8)	0 (7)	0 (7)
June, 1973	3 (10)	0 (8)	0 (5)	0 (5)

EXAMINATION OF OZONE EXPOSURE

Little or no ozone data was obtained in Denver during 1971. Total oxidant data was used to determine the degree of hydrocarbon control considered necessary. As previously mentioned, the second highest oxidant value of .18 ppm, measured at the Denver CAMP station, required a 60% reduction in hydrocarbon emissions. The CAMP station has always been traffic oriented and it would be reasonable to assume that ozone (or oxidant) levels would be higher in areas less influenced by nearby traffic. The data obtained to date has shown this assumption to be correct. The State started collecting ozone data in July of 1973 at five stations. The second highest measured

ozone concentration was .25 ppm for a one hour period. This level was measured in Arvada, Colorado on August 13, 1973. Using the same relationship referenced in the State Implementation Plan for determining hydrocarbon emission reductions required, it has been found that an 80% reduction in hydrocarbon emissions will be required. Violations of the ozone standard do not appear to be events peculiar to any one area in the region. It would seem that ozone is fairly evenly distributed, provided that the monitoring station is not biased by nearby traffic. Based on the limited data available at this time, it appears that the ozone "season" may be quite short. This trend is evident in the decreasing number of violations as ambient temperatures fall. It may be possible to institute emission control measures on a seasonal basis since hydrocarbon emissions during the winter months may be of little significance in the formation of ozone. Unfortunately, control of mobile sources requires control of both hydrocarbons and carbon monoxide. During the winter months when ozone levels appear lowest, carbon monoxide levels have historically been highest.

Number of Violations
of the 1-hour .08 ppm ozone standard by station
(Highest single concentration shown in parentheses)

Parkhill *Don Fed C.* *Don Fed C.*

STATION MONTH	NAT'L. JEWISH	OVERLAND	CARIH	ARVADA	WELBY
July, 1973	6 (.14)	ND	ND	ND	14 * (.11)
August, 1973	44 (.16)	15 (.17)	36 (.27)	35 * (.26)	49 (.17)
September, 1973	5 (.10)	9 (.12)	ND	18 (.15)	9 (.14)
October, 1973	0 (.07)	2 (.10)	ND	4 (.13)	0 (.08)

Highest ozone level observed = .27

Second highest ozone level observed = .25

*Less than a full month of data

ND = no data

EXAMINATION OF NITROGEN DIOXIDE EXPOSURE

The Denver Air Quality Control Region is currently priority III for control of nitrogen dioxide. The Denver AQCR is one of several AQCR's around the country where available data would indicate that the region is borderline between a priority I classification and a priority III classification.⁴ There has been considerable controversy in regard to analytical methods in use nationally. The two continuous methods being proposed by the EPA for future work could very possibly show that Denver deserves a priority I classification in which case control measures will be developed. Station siting is also important in regard to nitrogen dioxide measurements. Mobile source emissions are predominately in the form of nitric oxide. Peak nitrogen dioxide concentrations would be expected downwind of the downtown area after a sufficient time for oxidation has elapsed.

CONCLUSIONS

1. Relatively few people would be exposed to the high carbon monoxide levels observed at the Denver CAMP station for a full eight hours. Use of the eight hour data from this station alone does not appear advisable for implementation planning.

2. Ozone measurements have shown that needed hydrocarbon emission reductions are greater than had been anticipated. An 80% reduction has been determined based on recent measurements in residential areas.
3. Nitrogen dioxide may suddenly receive renewed attention upon region reclassification.

REFERENCES

1. Guidelines of Technical Services of a State Air Pollution Control Agency, Environmental Protection Agency, Contract No. 68-02-0211 (1972)
2. W. Ott and R. Eliassen, "A Survey Technique for Determining the Representativeness of Urban Air Monitoring Stations with Respect to Carbon Monoxide", *Journal of the Air Pollution Control Association* 23:685 (1973)
3. "National Primary and Secondary Air Quality Standards", *Federal Register* 36(84): 8186 (April 30, 1971)
4. "Reference Method for Determination of Nitrogen Dioxide," *Federal Register* 38 (110): 15174 (June 8, 1973)

STATION LOCATIONS AND CHARACTERISTICS

1. Welby - 78th and Steele
Welby, Colorado

SAROAD Classification: Suburban - Industrial
Elevation of sampler above ground: 15 feet
Distance from sampler to Steele: 45 feet

2. Arvada - West 57th and Garrison
Arvada, Colorado

SAROAD Classification: Suburban - Residential
Elevation of sampler above ground: 15 feet
Distance from sampler to 57th: 55 feet

3. CARIH - 2095 Julian
Denver, Colorado

SAROAD Classification: Suburban - Residential
Elevation of sampler above ground: 15 feet
Distance from sampler to 21st: 50 feet

4. National Jewish - East Colfax and Colorado Boulevard
Denver, Colorado

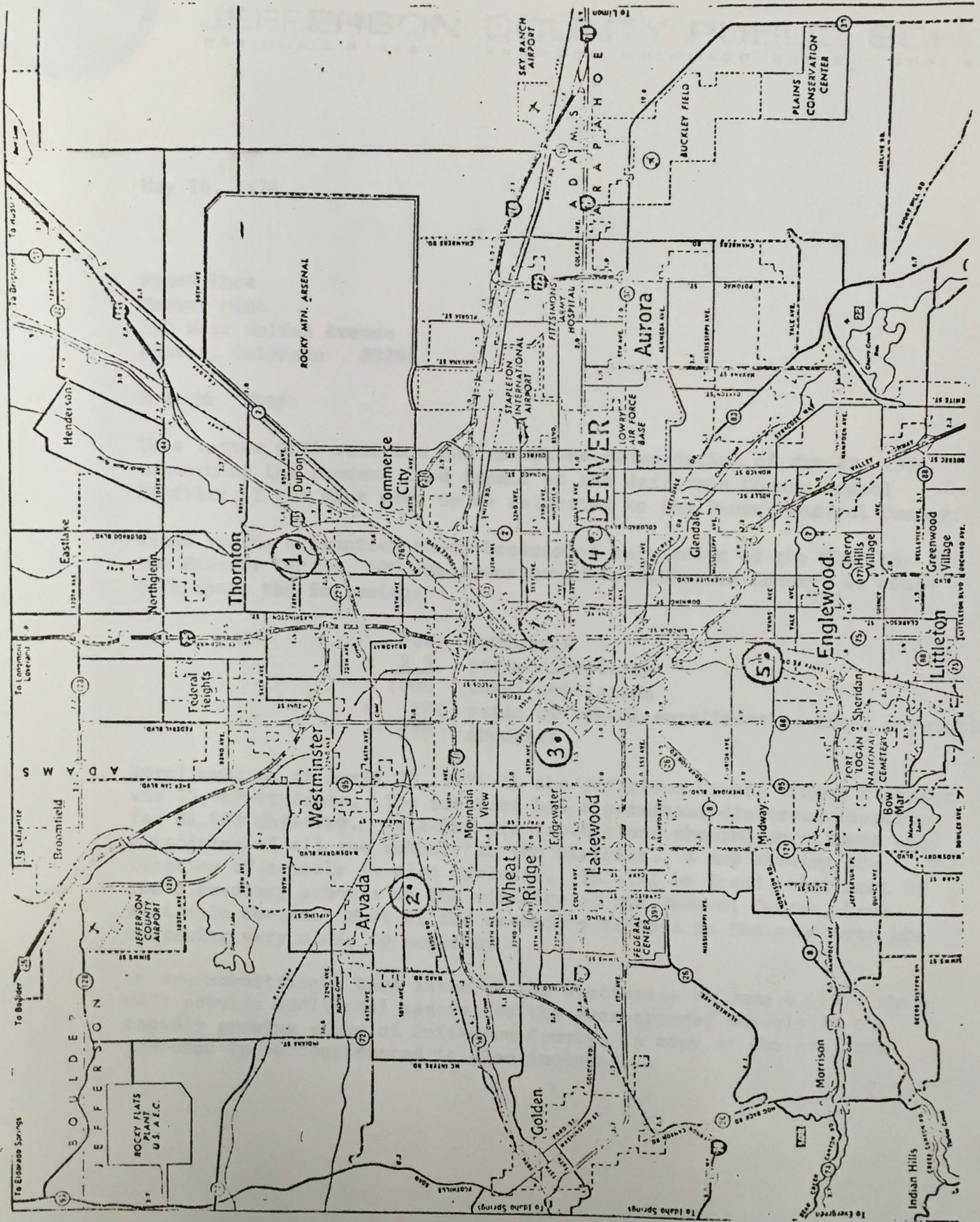
SAROAD Classification: Center city - Commercial
Elevation of sampler above ground: 30 feet
Distance from sampler to Colorado Boulevard: 30 feet

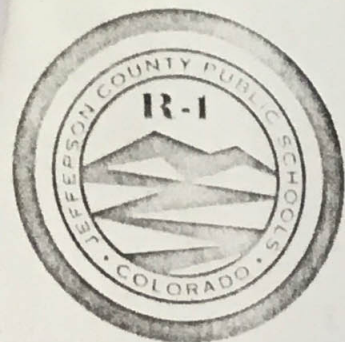
5. Overland - 2005 South Huron
Denver, Colorado

SAROAD Classification: Suburban - Residential
Elevation of sampler above ground: 15 feet
Distance from sampler to Huron: 65 feet

6. CAMP - 2105 Broadway
Denver, Colorado

SAROAD Classification: Center City - Commercial
Elevation of sampler above ground: 15 feet
Distance from sampler to Broadway: 20 feet





JEFFERSON COUNTY PUBLIC SCHOOLS

809 QUAIL STREET / LAKEWOOD, COLORADO 80215 / (303) 237-6971

May 16, 1974

Frank Rhea
Denver Mint
320 West Colfax Avenue
Denver, Colorado 80204

Dear Mr. Rhea:

This letter will reaffirm our telephone conversation of May 10, 1974 concerning the student load impact on the Jefferson County School District if the Mint were to be relocated to the Denver Federal Center.

Based on the assumption that, because of relocation of the Mint to the Federal Center, 400 employees moved to Jefferson County, we could anticipate the following:

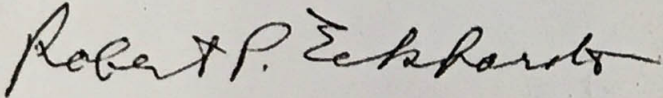
	400	employees
x	<u>2.5</u>	persons/employee
	1000	total population
x	<u>27%</u>	ratio of school enrollment to total population
	270	students

Enrollment as of April 30, 1974 in the Jefferson County School District was 75,467 students. The District has a permanent classroom capacity for 81,082 children. Attached are tabulations showing enrollment and capacities of all the schools in the District. A map showing the location of schools is also included. It will be found, that most of the elementary schools in the vicinity of the Federal Center, have available spaces. Most of the secondary schools in the same area are operating very close to capacity.

We are submitting a bond issue to the electorate on June 4, 1974 which will provide additional spaces for the over-crowded schools in the rapidly growing areas of Jefferson County. A copy of the projects proposed to be constructed is also included.

I hope this information helps you in your assessment of the impact the relocation of the Denver Mint to the Federal Center would have on the Jefferson County School District.

Sincerely,

A handwritten signature in cursive script, reading "Robert P. Eckhardt". The signature is written in dark ink and is positioned above the typed name.

Robert P. Eckhardt
Senior Planner

RPE:ff
Enc.

Environmental Assessment of New Maine P.O. Facility

